November 1941

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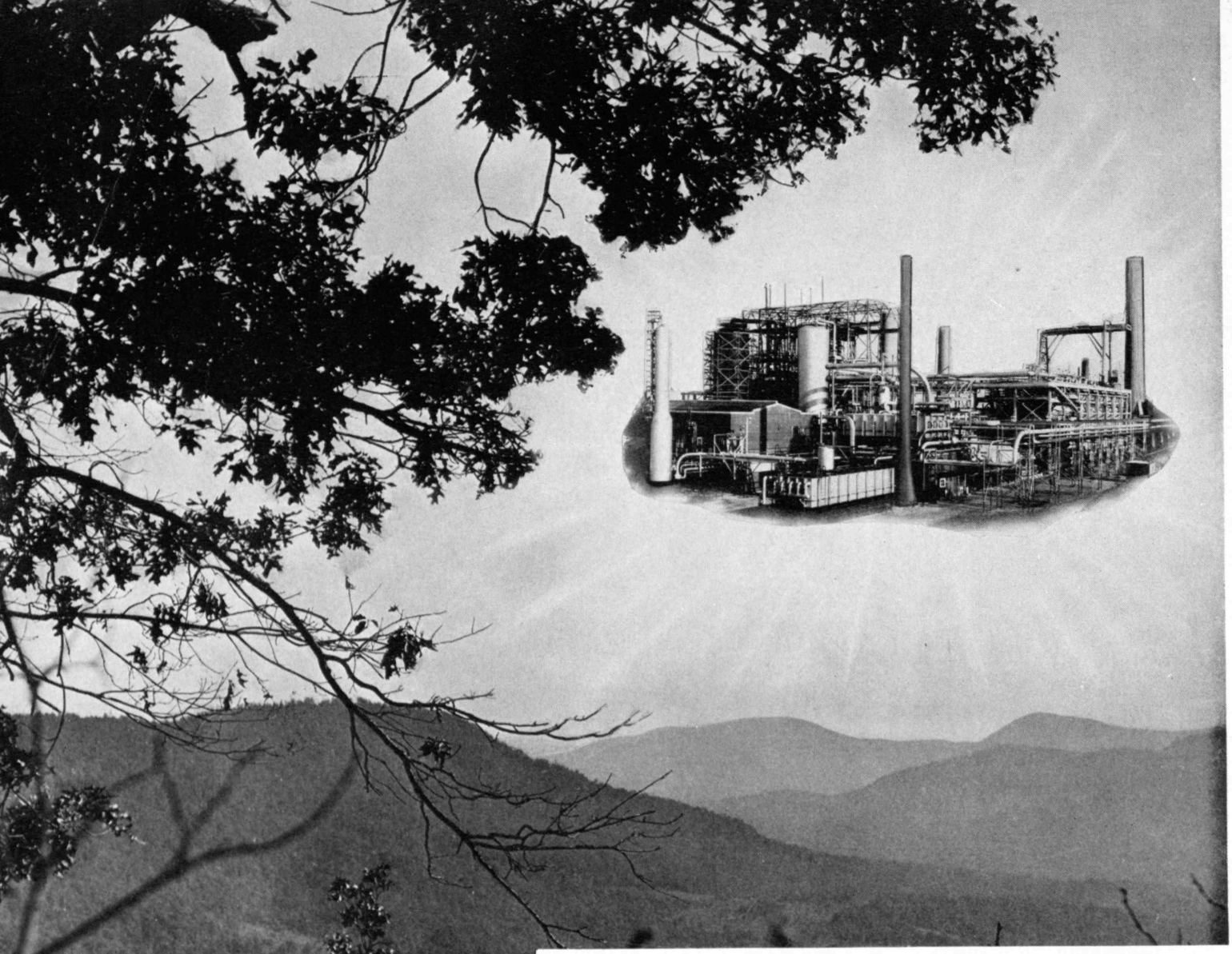

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This chemical era of ours is just dawning. Like the early settlers we're still standing on the shores of the Atlantic with a vast, uncharted wilderness lying to the west ready for development.

To those companies imbued with the pioneering spirit and driven by an urge to "*do things*", Badger offers an organization of engineers and construction men of kindred thought. Having travelled most of the trails to date, Badger technicians will be glad to help—first as guides and trail blazers in processing and then as designers and constructors of trail-blazing processes, equipment and plants.

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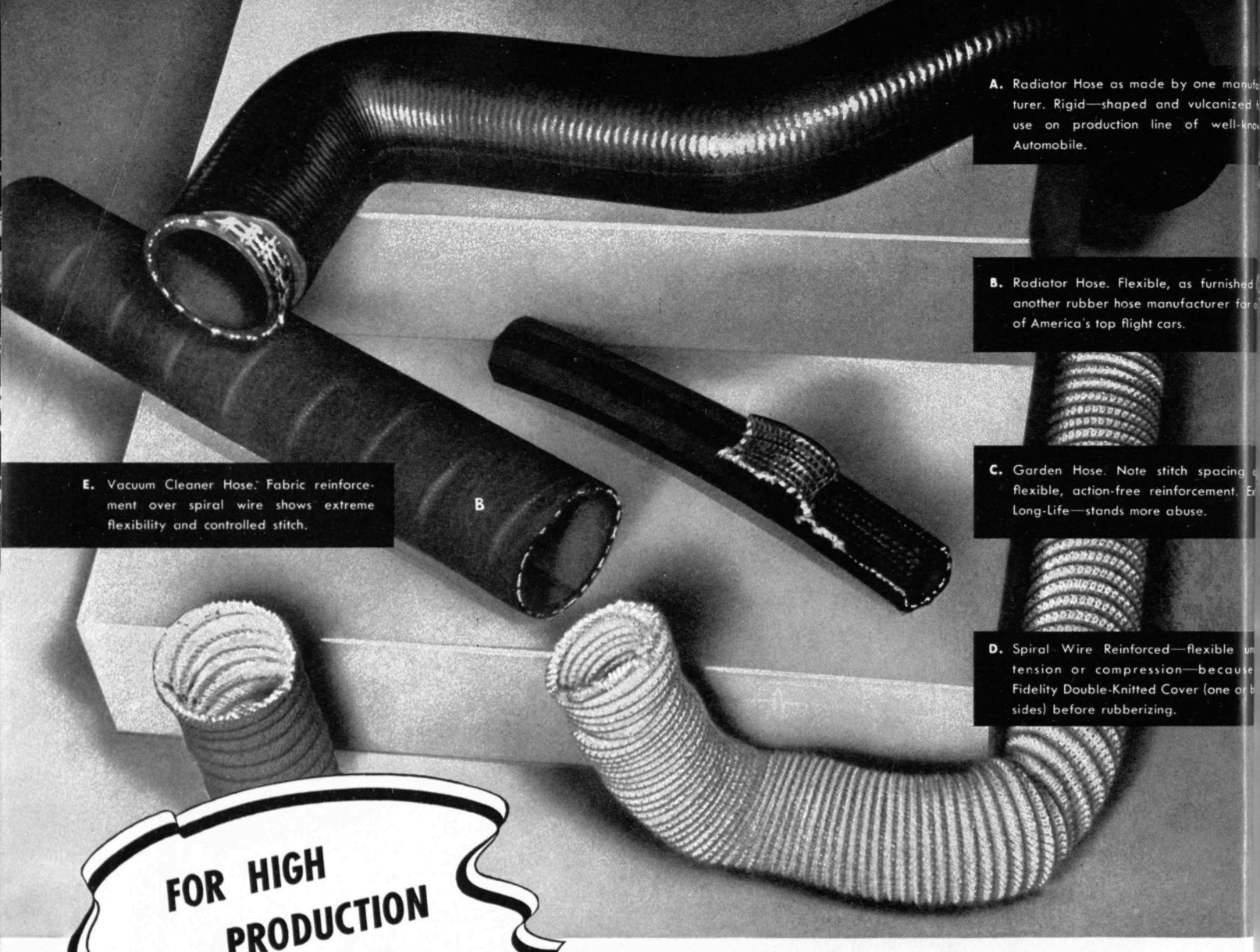

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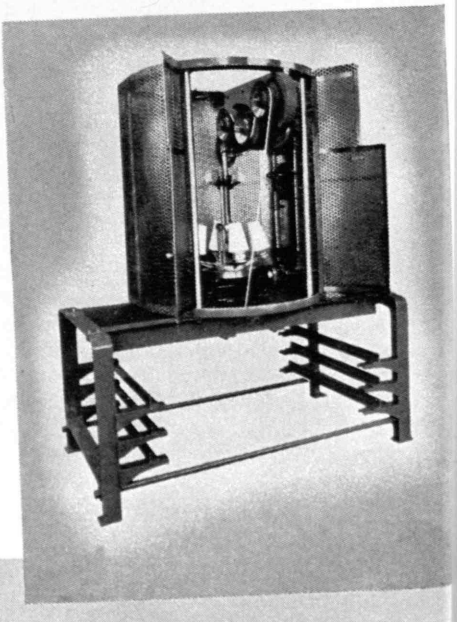
6 TO 10 FEET PER MINUTE

RECENT improvements in the FIDELITY Hose Reinforcement Machine make possible fabric reinforcement to rubber hose or tube: at higher speeds—6 to 10 feet per minute; over a greater range of diameters—¼" to 2¼" O.D.; in single or double stitch—in close or wide spacing; over rubber tube or spiral wire reinforcing.

Extreme flexibility, toggle action of formation, interchangeable knitting heads of three sizes and gear changes that control the stitch, readily adapt FIDELITY Hose Reinforcement Machines to a wide variety of applications in rubber hose and tube reinforcement. A few of these applications include: Radiator, Windshield Wiper and Car Heater Hose; Vacuum Cleaner Hose; Beverage Hose for Breweries, Dairies and similar industries; and Garden Hose.

Folder 641 gives you complete data on FIDELITY Hose Reinforcement Machines—Send for it.

• *Illustrated is the Fidelity Hose Reinforcement Machine that speeds production at lower cost.*



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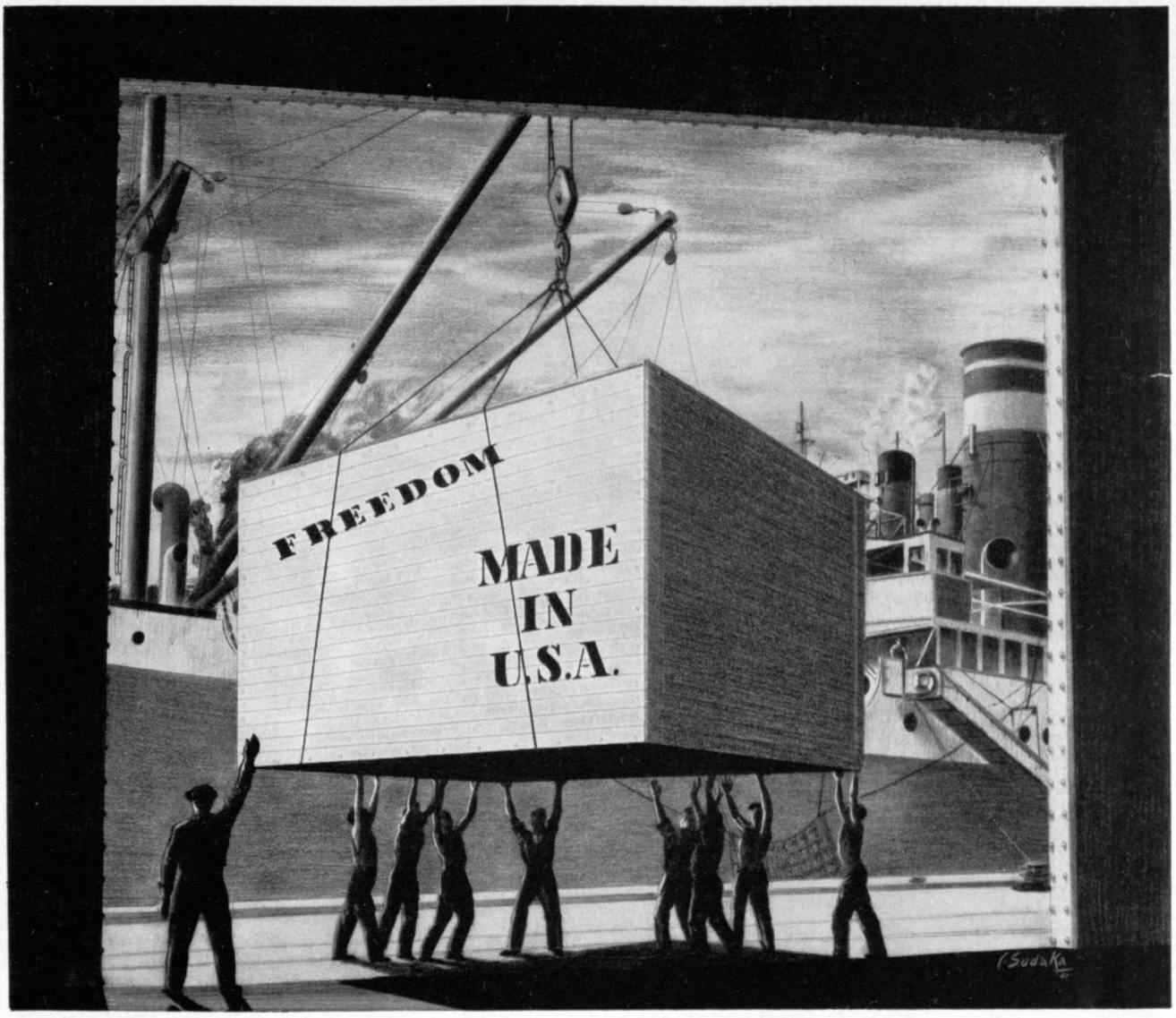


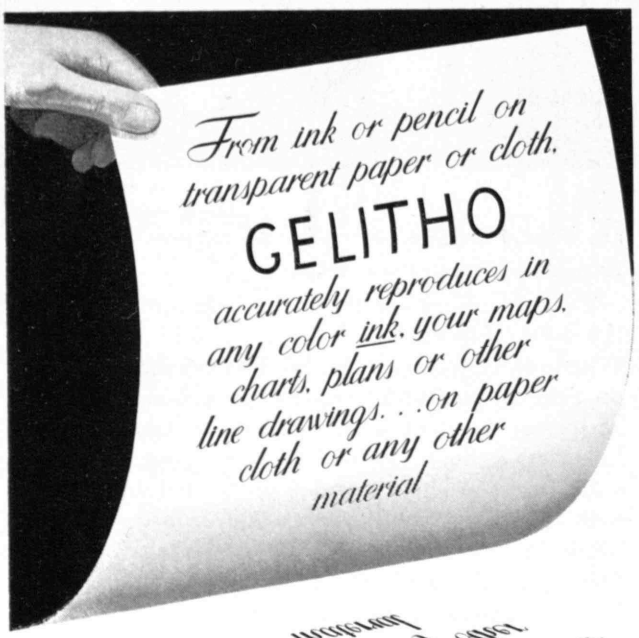
ON THE WHARVES of Liverpool and Singapore, in a freighter's hold halfway across the Atlantic, in a truck on the Burma Road, you will find them—three words stencilled on a thousand boxes and bales: "Made in U.S.A."

Yesterday, three big words to look for. But today they stand for more than the unequalled engineering and production that have made them familiar on every dock and pier in the world. They stand for the productive strength of a free people—a productive strength that cannot be matched; they stand for a determination to "deliver the goods"—a determination that will not be thwarted. And in the ports of the world's embattled democracies, where men are hourly risking their lives to take delivery, they stand for *freedom* itself!

To keep this great flood of goods moving is the most important job in the world today. Wherever it moves, General Electric helps to provide motors and propulsion equipment to keep it moving. In trains hauling ore to America's factories; in factories building guns and tanks and planes; in ships carrying oil to Britain and food to China; in destroyers and cruisers and battleships patrolling two oceans—the words "General Electric" stand beside "Made in U.S.A." *General Electric Co., Schenectady, New York, U.S.A.*

GENERAL ELECTRIC

954-125



THE TABULAR VIEW

Voyage.— Setting off on its comfortably uncharted course, The Review, Volume 44, is appropriately graced with a cover photograph of the four-master *Trade Wind* in harbor at Honolulu. To the Cover Club, due welcome to C. E. PATCH, '02.

Puzzle.— A paradox and its history are engagingly recounted in this issue (page 16) by WILLARD V. QUINE, mathematical logician of Harvard University, who thus returns to the journal in which in May, 1939, appeared his first lay discussion of the field in which he has won recognized authority.

Fighter Fibers.— Professor of Textile Technology at the Institute, EDWARD R. SCHWARZ, '23, has contributed directly and impressively to the theoretical knowledge and the practical techniques which have in recent years added so much to the number and versatility of the textile fibers available for man's use. Surveying the special demands for fabrics and fibers imposed by war (page 21), Professor Schwarz points out special applications in which the fibers that science has fabricated may be expected to ease the drain upon the stocks that nature produces.

More Sawdust.— Metal in place of trunnels and band saws instead of paring adzes notwithstanding, many old crafts and arts are being brought back to full vigor as the building of wooden ships enlivens the American seaboard. Few are so well qualified to write of this renaissance as is RICHARD HALLET, familiar to Review readers for his earlier flavorful maritime and exploratory stories. In this issue (page 24), Mr. Hallet tells with characteristic spirit of the redolent resinous doings to the eastward.

Forewarned, Forearmed.— When a problem is quiescent, means of meeting it in its vigor may well be discussed. With that belief in mind, HERBERT S. SWAN, city planner and industrial consultant, appraises in this issue (page 27) various methods of apportioning work in dull times. His conclusions concerning the need for the long view in industrial planning will occasion reflection. Mr. Swan has written widely on industrial development, zoning, and city planning.

Chapters of Record.— The development of aviation is a vivid and dramatic story, and in addition an important section in the annals of effective co-operation. The share which the nation's government has had in that co-operative effort in America is described for The Review (page 29) by L. WELCH POGUE, general counsel for the Civil Aeronautics Board, in an article drawn from a detailed address.

Drills on Parade.— The simpler and more obvious the art, the scantier and more obscure its history. This generalization appears justified by the findings which LEROY L. THWING, '03, reports (page 31) after further investigation of the holey history of making holes. Mr. Thwing has contributed frequently to The Review on various aspects of the history of technology.

With reputations depending on performance, Diesel engine builders take no chances in selecting materials. Hence the widespread use of Molybdenum irons for such vital parts as cylinder heads, liners and pistons where heat resistance, as well as strength and wearing quality, is demanded.

Molybdenum in combination with chromium makes gray iron highly resistant to growth and cracking, gives good wear resistance and strength—all at comparatively low cost.

Our publication "Molybdenum in Cast Iron" will gladly be sent to those interested.

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MOLY

MAIL RETURNS

Reminiscence

From Alfred V. de Forest, '11:

At the time of the 1911 reunion I was greatly impressed with the way in which the older generations of Technology men were meeting their duties and responsibilities. If you think well of the enclosed expression of these thoughts, I should be glad to have you publish the accompanying remarks:

Thirtieth Reunion — 1941

What do you look like after thirty years?
Come to a class reunion, having stayed away
From all the intervening get-togethers
Because you were "too busy," perhaps shy
Because you didn't graduate,
And even Denny's golden pen
Could not find just the words
To dissipate that last subconscious fear
You were not quite so good as all the rest.
But now at fifty odd, you're reconciled
To that particular mold in which you're cast;
Heredity of structure and the ills that flesh is heir to.
The spirit has had time to place its signature
On the completed work. The lines are carved
About the eyes, and in the set of jaw
And firmness of the face shines out the character
That life has made of you, or you of life.
Ah, there's the point. Are we the masters
Or the slaves of life? We were but twenty-five
In World War I, and clay yet soft beneath the potter's thumb.
We lived through easy years, and prohibition's disillusionment,
And drifted on to vote for Hoover, that apotheosis
Of technical control and fixed economy.
Then came the test; with children growing up
And something less than mere prosperity
Around the corner of an endless road —
Did these years deplete the last reserves of adaptation
And leave us but a stiff and brittle cast
To bear the arrows of these new outrageous times?
Our children are still plastic; they can rally
To march through Georgia, or face the bitterness
Of Appomattox. But we are set, and now
The mold is broken, what will we look like
After ten years more? We worshiped our Technology
And now technology is master over all our world —
An era now where strength is dominant
And brutal force is now accounted best.
Can we be also masters of a world beyond
The strategy and tactics of the sword?
And so, perhaps pass on to grandchildren
A faith, a wisdom to keep them from our folly
Of two wars.

Come back in 1951 and note again
The set of shoulder and the glance of eye!

Cambridge, Mass.

Defining the Issue

From Gregory M. Dexter, '08:

The claim has been made by Dr. Compton that issues are clearly drawn in this world where the defense of human rights calls for the strong, simple virtues. The real issue, on the contrary, although there are many side issues, is the demand of men to be properly fed, adequately housed, and well clothed.

Several studies have shown that about 60,000,000 people in the United States do not have sufficient income to afford food, housing, and clothing for healthful living. Little imagination is required to guess how much worse conditions must be in such countries as Germany and Japan.

In addition, millions of men were out of work in 1933 although they knew that wheat was rotting on the ground be- (*Continued on page 8*)

This is one of a series of advertisements telling what leading Consulting Engineers think of modern steam heating.

Clyde R. Place, Consulting Engineer. Member of American Society of Heating and Ventilating Engineers; Board of Governors, New York Building Congress. S. B., Mechanical Engineering, Massachusetts Institute of Technology.

"An ideal heating system is one that insures comfortable occupancy at all times, no cold or hot 70°", writes Clyde R. Place. "This means a heat source that is in continuous operation and whose heating output is varied with external temperatures and wind conditions. The modern type of steam heating system, with an effective control, fully accomplishes this result. I have found comfortable occupancy to exist in all the latest buildings in which my design of steam heating with its control has been installed."

▲

Clyde R. Place has specified "Controlled-by-the-Weather" Webster Moderator Systems of Steam Heating for several outstanding structures, one of the most recent being the modern office building for Aetna Casualty & Surety Company at 151 William Street, New York. Completed in 1940 and operated through the winter of 1940-41, this installation has demonstrated how splendidly modern steam heating operates in coordination with central *winter* air conditioning.

H. F. MARSHALL '19

WARREN WEBSTER & COMPANY, Camden, New Jersey
Pioneers of Vacuum System of Steam Heating
Est. 1888 : : Representatives in 65 U. S. Cities

STEAM Heats America . . . .

MAIL RETURNS

(Continued from page 6)

cause they were unable to pay for it. Education, newspapers, advertising, the radio, and automobiles have carried everywhere the knowledge that for a small minority proper food, excellent housing, and ample clothing are easily obtainable. No wonder radical changes have come in various governments in meeting or controlling the demands of men for healthful living, let alone radios, automobiles, washing machines, and electric refrigerators.

The revolution was defeated in Spain with the help of Hitler and Mussolini. G. D. H. Cole and Margaret Cole, in *A Guide to Modern Politics*, have described methods used in other countries, ranging from the violence of the Fascists in Italy to the abominable methods in Russia.

Yet the world has ample supplies of raw materials and manufactured products. Note the glut of oil, rubber, cotton, tea, wheat, tin, copper, silk, and sugar! Instead of raising the standard of living by making such supplies available at low cost, the attempt has been to restrict output and raise prices in order to protect wages and profits. Compare J. W. F. Rowe in *Markets and Men*, and Thurman Arnold in *The Bottlenecks of Business*. Producers have even divided the world markets. Prohibitive tariffs and other bars too numerous to mention have merely added to the difficulties of men in getting food, housing, and clothing at low cost for healthful living.

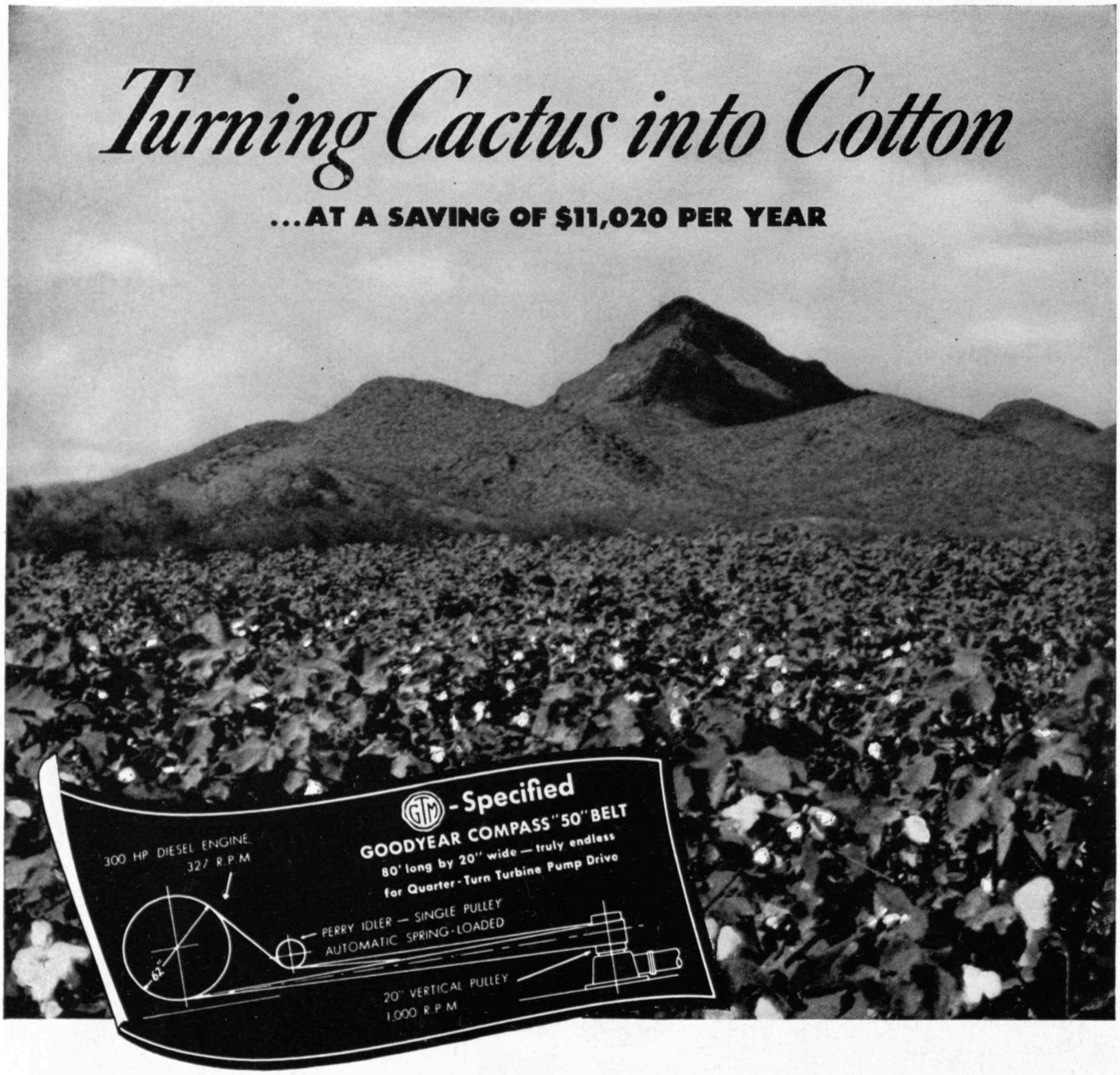
No wonder political leaders of Germany, Japan, and Italy have argued that their countries must have access to raw materials to such an extent that they are self-sufficient. Difficulties from language, religion, temperament, and changes in technology make any permanent solution by division of territory impossible. Compare Sir Norman Angell in *Raw Materials, Population Pressure and War*. The only solution is a working agreement of some sort that assures to all access to raw materials and even manufactured products on reasonable terms. The terms are now settled for the vanquished by the victorious in war, as in the Versailles Treaty. Other more equitable means must be found. For the living standards of men in all countries, including the defeated, must be raised if peace is to endure.

The United States, however, is proceeding on the assumption that outright defeat of Hitler and Mussolini is the only solution of the problems in equitable distribution of goods. No reasonable objection can be made, of course, to adequate defense within our territorial limits provided repeated efforts are made to negotiate a peace. But more than defense should not be permitted since the leaders of the Allies are already talking of a new treaty that will make even more impossible than under the Versailles Treaty the self-respect of Germany and her partners. The assumption that the *(Concluded on page 54)*

PUTTING MORE BRAINS IN BRASS. Men make brass. Previously, we have shown you some of the men who put the human touch into copper and copper-base alloys for Revere Copper and Brass Incorporated. Here is an example of the equipment that helps them do it—by freeing their energy for things that call for headwork. This "roller coaster" handles materials with the efficiency of a well-run railroad. Because it lets skilled men use brains instead of brawn, it helps to put more brains behind the metals you get from Revere. This machinery, built in 1938, is indicative of the foresight which enables Revere today to meet the ever-growing needs of the national emergency—and which will enable Revere tomorrow to supply more and better materials for the re-birth of American industry. Revere Copper and Brass Incorporated, 230 Park Avenue, New York.

Turning Cactus into Cotton

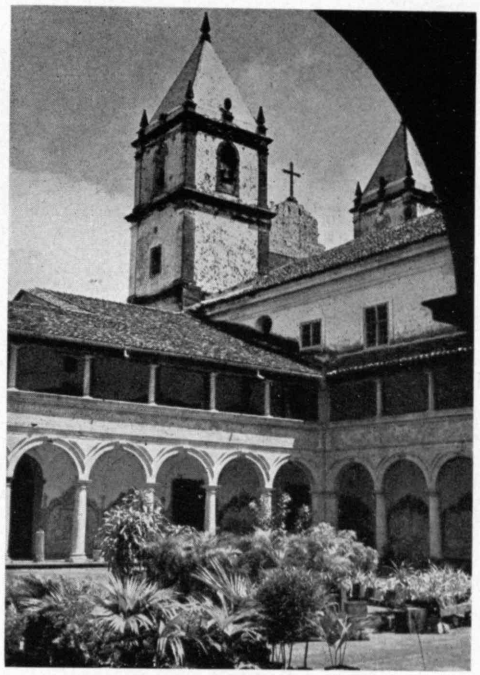
...AT A SAVING OF $11,020 PER YEAR



AN Arizona cotton grower faced a costly irrigation problem. To bring 600 acres of desert land into production, he needed seven gallons of water per minute, per acre, during the growing season. But the best local wells averaged only 2,250 g.p.m.—making two wells, costing about $24,000, essential. Then engineers suggested that a single Diesel-driven pump, with special reversing equipment for "surging" water in the well, might do the job—if a belt could be found that would stand this heavy-duty two-way service. This brought in the G.T.M.—Goodyear Technical Man. On his recommendation that a Goodyear COMPASS "50" truly endless belt would fill the bill, the installation was made. In two years' service this pump has averaged about 4,500 g.p.m.— *at a saving of $38 per day under the estimated cost of operating two wells or a total saving of $11,020 for a working year of 290 days!* So successfully has the COMPASS belt handled this heavy alternating drive without slip or stretch, 23 similar installations have been made by neighboring growers. To consult the G.T.M. on your belt-killing drives, write Goodyear, Akron, Ohio or Los Angeles, California — or phone the nearest Goodyear Mechanical Rubber Goods Distributor.

Compass — T.M. The Goodyear Tire & Rubber Company

THE GREATEST NAME IN RUBBER
GOODYEAR



Chester H. Pope, '09

Cloisters of San Francisco Monastery in Bahia, Brazil

VOLUME 44 NUMBER 1

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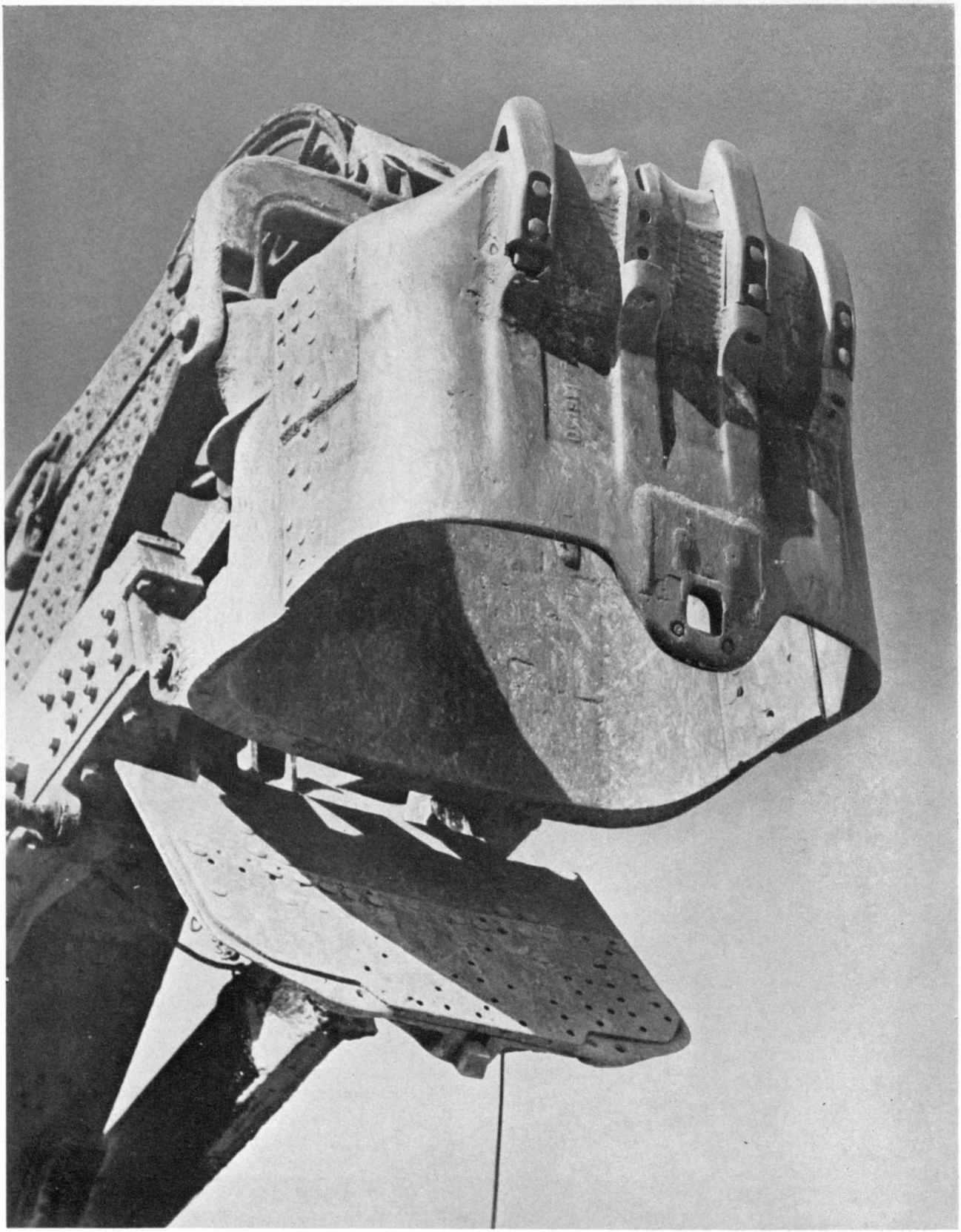


Courtesy United States Department of Commerce

MECHANICOSAURUS

Battered a bit, and partly dehorned, but still ready to bite

THE
TECHNOLOGY
REVIEW

Vol. 44, No. 1 November, 1941

The Trend of Affairs

On Ways to the Water

PERHAPS it is because most men lift their eyes when a great ship slides down the ways that they seldom consider the complex engineering problems of a launching. The moment a vessel begins gliding toward the water, the doors to the past are closed; the ship becomes a steel creature of the future, a symbol of commerce or war and of adventure. Only the men who designed and built her remember the days and the months of her creation; only the engineers who, long before her keel was laid, began to plan her launching, know the problems and the dangers of moving her from the land to the sea.

The methods of launching a ship have changed little from those of the Romans, who slid their vessels into the water on timbers greased with animal fats. Any advances that have been made are concerned chiefly with refinements of technique and solving problems of weight undreamed of by early shipbuilders.

The fundamental requirements for launching a ship are fixed ground-ways — broad tracks of timber reaching from the land to the water. Upon these slide the moving ways, bearing the cradle in which the ship rests during the actual launching. While timber — longleaf yellow pine — still remains the best material for ways, steel and concrete often enter into the construction of cradles, and electrical and hydraulic devices are now used during the launching operation.

The launching cradle includes forepoppets and afterpoppets, which are rigid structures of timber or steel placed at the bow and near the stern. The poppets fit snugly to the shape of the hull and are held in place by bands, or straps, commonly known in shipyard parlance as "bellybands." The bow poppet is particularly important, for it must be strong enough to carry a tremendous load when the stern of the ship enters the water and begins to rise, thus transferring from 20 to 25 per cent of the weight of the vessel to the bow section for a few seconds. Not only must the poppet distribute this load over an area sufficient to prevent excessive pressures on the launching lubricant but it must also meet the pivoting forces exerted during the period when the ship is partly in the water and partly on land. Anyone who has landed a small boat at a right angle to a beach and tried to step ashore well knows the disastrous effects of pivoting.

The theory involved in launching a ship is not especially complicated. It is an engineering operation based chiefly on figures and carefully kept records, and every launching is planned to some degree on the experience gained from a previous launch. Only those engineers who are fully aware of the problems presented by weight, stress, stability, center of gravity, and the forces involved in moving a heavy ship can know the anxiety that inevitably attends a launching. Every step must be planned in advance, for no rehearsal is possible. The launching of a modern ship usually involves the assistance of shipyard workmen of many different trades, and the actual operation of launching is carried out by a large crew of men specially trained for innumerable exacting tasks which must be done on a split-second schedule.

For some types of vessels the side launching method is used, a practice quite common in the shipyards of the Great Lakes and in narrow rivers. The danger of capsizing is one which must be considered in this method, and only ships which are not top heavy may be thus launched. One advantage of side launching is that the ship is built on an even keel, a fact which has certain advantages during construction. A vessel launched stern first must necessarily be built on an incline, so that all structural members which ordinarily occupy a vertical position must also be inclined in building. A ship is built on a foundation of keelblocks, shores,

I.N.P. Sound Photo

Her four ground ways in the foreground, her forward poppets distinguishable just under her stem, with bellybands running up from them to her rails, the 35,000-ton battleship Massachusetts *goes into the water at Quincy.*

and cribbing, and her weight is not transferred to the launching cradle and moving ways until a short time before she must slide into the water. The operation is analogous to taking the foundations from under a huge building and transferring its weight to skids on which it can be moved a considerable distance.

The exacting operation of transferring the weight of the hull to the launching cradle usually begins less than eight hours before the time for the launch. It involves the removal of keelblocks, shores, and bilge cribs by a carefully arranged and precisely timed plan which permits the gradual and even distribution of the tremendous weight of the ship upon the ways. Greatest care must be taken to avoid stresses which would damage the structure of the vessel. The removal of the blocks supporting the ship's keel is an undertaking which sometimes involves splitting individual blocks to release them. Various methods are employed to expedite this operation. One is a keelblock made up of two sections between which several inches of sand are packed and confined by a metal band. Release of the band allows the sand to flow out, thus freeing the block. Still another way of releasing pressure on the keelblocks and cribs is to drive in the huge wedges which have been placed between the sliding ways and the cradle.

Although the ship does not rest on the launching ways until shortly before she slides into the water, the ground ways must be prepared before construction starts, and upon them the first coat of a hard launching lubricant is laid to a thickness of about five-eighths of an inch. Other special types of lubricants are added over the base coat. Some indication of the problem of lubricating the launching ways for a large ship is shown by the fact that 76,850 pounds of greases were used on the ways of the aircraft carrier *Lexington*. As the *Lexington* weighed 26,897 tons on the launching cradle, between two and a half and three pounds of grease per ton were hence required to aid in her slide to the sea.

Whereas the early launching lubricants were made chiefly from animal fats, modern greases are composed almost wholly of petroleum products, and much research has been devoted to their composition. The needs of the launching engineers are met by various types of grease designed to withstand not only the pressures involved in the passage of a ship over the ways but also the heat generated as a result. Always, of course, the greases must meet the fundamental requirements of a lubricating agent in order to permit the moving ways to slide freely on the ground ways. The average initial pressure on launching lubricants is about two tons a square foot.

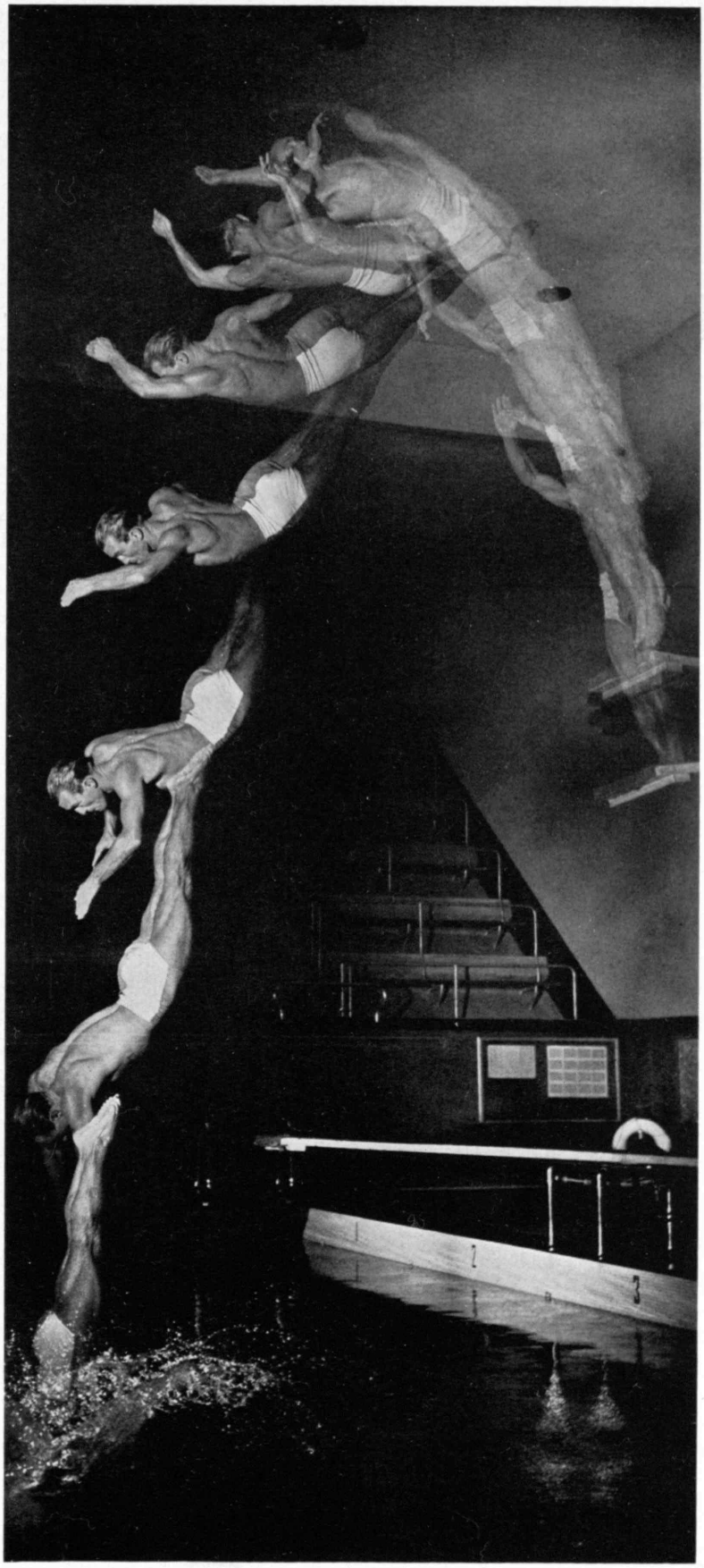
The calculations involved in launching a large ship are no less vital than those involved in her design and construction. From the day the contract is signed until the launching triggers are released, a group of engineers is constantly at work making launching calculations based on each step of the construction. Estimation of the weight of a ship at the time of launching is important, and in large vessels every piece of material that goes into her construction is weighed. The stability of the ship must also be figured to meet the important problems that arise in the few seconds during pivoting. No less significant to the engineer is an estimate of the longitudinal and vertical positions of the center of gravity at the moment of launching. This calculation is somewhat more difficult to make than the determination of weight, since the center of gravity for these positions often depends upon the stage to which construction of a vessel has advanced at the time of the launch. Because of the pivoting forces exerted on the bow at the moment when the stern becomes buoyant in the water and because of the great pressure that may be exerted on the ends of the ways as the ship reaches a critical point in her journey to the water, the longitudinal position of the center of gravity is extremely important. The vertical position of the center of gravity enters into calculations of stability during the period in which the ship may pivot and also after launching.

The responsibility of the launching engineer and his staff does not end until the new vessel is safely tied to the fitting-out dock. The operation of launching is a peculiar one, in that a structure of tremendous weight must be started down the ways under the force of gravity or by the push of hydraulic jacks to reach a speed of approximately twenty-five feet a second, or between fourteen and fifteen knots. Then, the moment the ship is clear of the ways and water borne, the vast amount of energy released in her run down the ways must be absorbed. In simple, she must be stopped quickly, often within 200 feet of the end of the ways. The problem becomes extremely critical when the body of water in which the ship is to be launched is restricted.

If the launching area offers ample room for a long run, artificial methods of checking the speed of the vessel are unnecessary, and tugs handle the new ship as soon as she loses momentum. The task of stopping a vessel quickly, however, calls for extraordinary measures and careful planning. In the launching of the *Lexington*, a vessel more than 800 feet long, great piles of chain were arranged at intervals on either side of the launching ways and were connected to the hull by cables. As the ship entered the water, the braking effect of several hundred tons of chain was brought into play successively, and the ship was stopped in less than 200 feet. Plans for checking the speed of the *Lexington* involved several months of study and tests of the effect of chain drags pulled over various types of ground by heavy locomotives. This method was used most successfully in the recent launching of the battleship *Massachusetts* in the narrow confines of the Fore River at Quincy, Mass.

Various methods are used to release a ship for launching. One of the most common in the past was to cut through timber soles attached to the sliding ways and the fixed ways. Steel plates, however, have largely taken the place of timber for this purpose, and the release is accomplished by cutting the plates simultaneously with torches. Still another method uses dogshores, timbers which are bolted to the sliding ways and to the ground ways in such a manner that one end of the timber is allowed to drop by means of a tripping timber, thus releasing the ship. This method was employed in the launching of the steamship *Normandie*, when five 12-inch by 12-inch oak dogshores were used on each side of the ship. Mechanical and hydraulic triggers are now widely employed for releasing vessels, and the *Massachusetts* was fitted with mechanical triggers which were released electrically.

Although the engineer makes plans to start a ship down the ways by force of gravity, he also provides rams or jacks which give the launching cradle a push if it does not move when the triggers are released. The power of some of these jacks is indicated by the fact that a jacking force of 560 tons, or more than 4.65 per cent of the launching weight of the ship, was provided for the steamship *Mariposa*.



When the musical comedy Viva O'Brien! *was trying out in Boston, its diving star, Pete Desjardins, visited Technology's Alumni Pool after the show one night. Harold E. Edgerton, '27, using further refinement of his famed multiple-flash stroboscopic photography, then made this among many startling pictures.*

Russell's Paradox and Others

BY WILLARD V. QUINE

LOGICIANS tell of a village barber who shaves all those villagers — and only those — who do not shave themselves. The question of the barber's own toilet holds a certain fascination for the logical mind. For it has been agreed that the barber shaves any villager, x, if and only if x does not shave himself; hence when we let x be the barber, we conclude that he shaves himself if and only if he does not.

This self-contradictory inference need not shake our faith in logic but only in the barber. There *is* no barber of the kind described; for the assumption that there is leads, as we have seen, to contradiction. The simple fact is that *no villager can shave exactly those villagers who do not shave themselves.*

Let us consider the abstract structure of the argument, stripping it of all tangible features. Instead of speaking of the relation of shaving, let us speak of an unspecified relation, R. Instead of speaking of the class of villagers, let us speak of an unspecified class, C. The law about shaving and villagers, italicized above, gives way to this precisely parallel but thoroughly abstract law about C and R: *No member of C bears R to exactly the members of C that do not bear R to themselves.* The proof of this law differs in no way from the shaving argument except that R takes the place of shaving and C takes the place of the class of villagers.

The infinitude of specific cases covered by the abstract law includes certain surprises. Kurt Grelling's discovery of one of these cases very nearly blighted the budding science of semantics; and Bertrand Russell's discovery of another precipitated a series of revolutions in logic and a crisis in the foundations of arithmetic.

To construct Grelling's example, we take C as the class of adjectives and R as the relation of denoting. This latter is the relation that the adjective "human" bears to each human being, that the adjective "green" bears to each green thing, and so on. When R and C are thus construed, the abstract law tells us that *no adjective denotes all and only the adjectives that do not denote themselves.*

The result becomes more baffling as we contemplate it. Surely Grelling was free to introduce a new adjective, "heterological" — as he did, a third of a century ago — to mean "not denoting self." This new word would seem to be quite clearly defined and to be obvious in its application: The adjective "long" is heterological since it is not long and thus does not denote itself; so also for the adjective "monosyllabic," since it is not monosyllabic, and for the adjective "German," since it is not German. On the other hand, "short" is not heterological because it is short and thus does denote itself. Likewise "pentasyllabic," being pentasyllabic, and "English," being English, and "adjectival," being adjectival, are not heterological. In view of this perfectly lucid usage, how can we hold that there is really no such adjective as "heterological"? And yet we must, for "heterological" is supposed to denote all and only the adjectives that do not denote themselves, whereas we proved that *no* adjective could perform this feat! Just as the barber vanished when we asked whether he shaved himself, so the adjective "heterological" vanishes when we ask whether it denotes itself — i.e., whether "heterological" is heterological.

If "denoting" makes sense at all, and if "heterological" is adopted as an abbreviation of the phrase "not denoting self," then "heterological" is indisputably an adjective. The painful conclusion which logicians tend to draw is that the general notion of denoting — once the key notion of semantics — is an illusion.

Let us turn, finally, to that instance of the law which was actually the first to be discovered, namely, Russell's. To construct his case, we take the R of the law as the relation of containing as member, i.e., the relation that a class bears to each of its members. We take the C of the law as the class of all classes. The law, thus applied, tells us that *no class contains all and only the classes that do not contain themselves.*

Common sense leads us to suppose that we can specify a class simply by explaining under what circumstances anything belongs to it. A phrase of the form "the class of those objects such that . . ." can be depended on, supposedly, to describe a class, empty or otherwise. But what if we fill the blank "such that . . . " in the fashion "such that they are classes not containing themselves"? What, in brief, of the class of the nonself-contained classes? The result last italicized tells us that there is *no such thing* as the class of the nonself-contained classes. This law has come to be known as Russell's Paradox.

Gottlob Frege, the father of modern logic, was ignorant of this paradox thirty-eight years ago when he finished his *Grundgesetze der Arithmetik*. In these two volumes he developed a profound and ingenious system of logic and showed that from it he could derive the whole of arithmetic and algebra. It was one of the great scientific monuments of all time. The second volume had just gone to press when Frege, after allowing himself perhaps a sigh or two of relief in consideration of having polished off a fifteen-year stint, turned to his mail. In it was a letter from Russell, wherein the paradox was revealed and Frege's system was shown to lead to contradiction. "Alas!" Frege wrote; "arithmetic totters!"

The era of reconstruction was on. The bulk of Frege's work could be saved but had to be pried loose and implanted on firmer foundations. The task could not be done simply by repudiating the class of nonself-contained classes, for infinitely many other alleged classes can be shown to lead to analogous contradictions. Nor does any general method exist for spotting contradictory cases in advance. Sundry makeshifts have been proposed over the years, however, and in conformity with them various powerful systems of logic have been constructed.

In effect, each such remedy provides one or another modified relation to supplant the naïve relation of class to member. For each of these remedies, there is a precisely parallel remedy also for semantics, providing a modified relation to supplant the naïve one of denotation. But we can choose among the various proposals only on grounds of convenience, for none of them has the sanction of common sense. Our common sense,

in the matter of classes and of adjectives, stems from Stone Age theorists who made a mistake.

New Work for Glass

GLASS in fibrous form, made from minerals native to continental United States and possessing a unique combination of properties, is filling an important role in defense as well as in many phases of peacetime industry. The attributes of glass in solid form — its plasticity when molten, its hardness and strength, its cleanliness, and its durability — are retained in fibrous glass. In addition, the original properties are extended by many new ones not found in other materials of comparable utility.

Two basic forms of fibrous glass are now made — a wool and a textile fiber. The wool type is used primarily for thermal insulation. Coarser fibers of this same basic type are also extensively used for air filtration in air-conditioning systems. The second basic form — a textile fiber — is made either as continuous-filament or as staple-length fibers, which are many times finer than human hair. These are employed to fashion yarns and threads and are subsequently woven into fabrics.

The manufacture of fibrous glass in all its forms begins with the production of virgin glass from carefully selected sands and other mineral ingredients. The raw materials are checked with great accuracy, and the ingredients are melted under close temperature control. Various types of glass are produced in this manner, each kind designed to provide the characteristics desired for the products ultimately made from it.

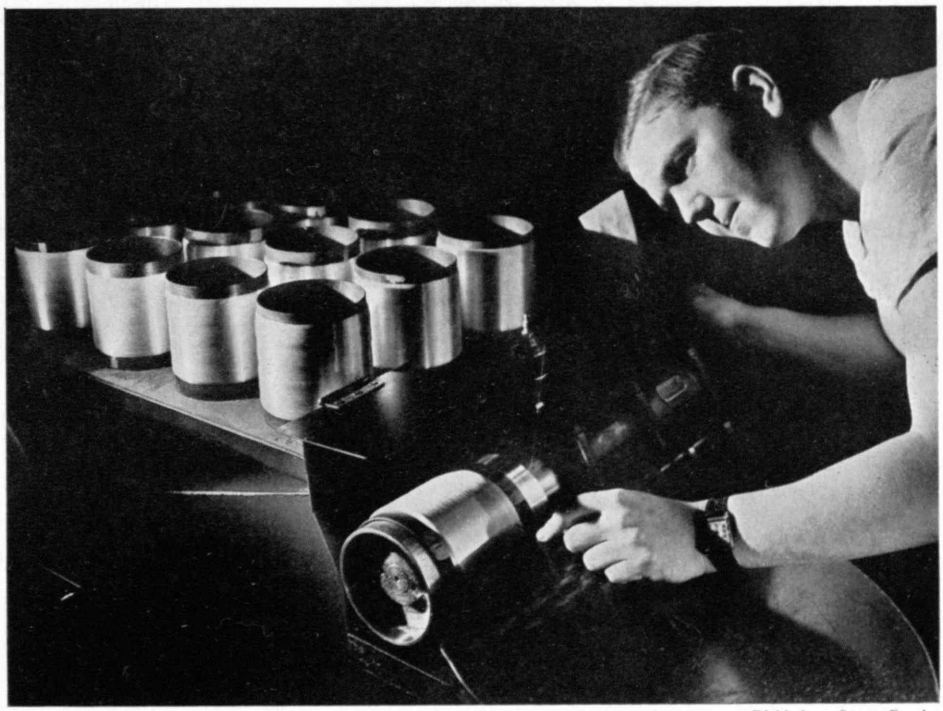
In the processing of both continuous-filament and staple fibers, the glass is melted and placed in a machine that molds it into small greenish marbles which weigh about one-quarter of an ounce each. Those marbles which pass the ensuing rigid inspection for imperfections are placed in large glass containers above special electric furnaces and are remelted.

For production of continuous-filament fibers, a large number of filaments — generally 200 or more — are drawn simultaneously from the molten stock, gathered together in a strand, and caught on a winder that draws them at a speed in excess of a mile a minute. The strand is still so fine that it can scarcely be seen as it is gathered by the winder, yet the speed at which the filaments are produced is evidence of their great tensile strength. Subsequently, on standard textile machinery, strands are twisted and plied to form glass thread. Thereafter, many forms of all-glass tape, braid, cord, or cloth may be produced on standard machinery. Staple fibers, drawn from the molten glass by steam, are eight to fifteen inches long.

Much larger furnaces are used in making glass wool, which is formed directly from the molten glass without any intervening marble stage. Raw material is mixed in batches of several tons — yet the ingredients are controlled by formulas exact to the ounce. The glass is caught by jets of high-pressure steam and yanked into threadlike fibers which form a woolly blanket on a moving belt. This material is then fabricated into dozens of different forms — bats, blankets, strips, and nodules for insulation of ovens, boilers, tanks, stills, ducts, and brine and steam pipe lines.

In national defense, fibrous glass is filling many needs in the construction of airplanes, naval and merchant ships, and cantonments. The weight it can save on a battleship is equivalent to that of the fuel oil consumed by the vessel during six days away from its base. Glass products, including glass cloth, insulating boards, blankets, and pipe covering, are being specified for hull insulation, insulation of crews' quarters, bulkheads, ammunition magazines, gun turrets, 'tween-deck spaces, and pipe wrapping on combat ships. The use of glass in pipe wrapping alone means a potential weight saving of seventeen tons on a battleship, since the glass cloth weighs but eight ounces a square yard.

Airplane wings covered with glass cloth were recently successful in flight tests. Fibrous glass is likewise being used to insulate planes, and glass-insulated wire and cable are finding application in airplane lighting, instruments, radio, and ignition. Moistureproof glass tarpaulins are being used to protect instrument-loaded cockpits. Electrically heated diving suits for deep-sea divers are also being insulated with fibrous glass.



Continuous filament is made from glass which flows from minute orifices at the bottom of an electric furnace. The tiny strands, almost invisible, are gathered together and caught on a winder such as this.

Ritchie from Owens-Corning

Timber Structures, Inc.

Timber in modern structural application. These timber bowstring trusses have a span of 140 feet. They were prefabricated in the manufacturer's plant, shipped by rail knocked down, and are here seen being placed in position in the construction of an aircraft factory.

The Point of a Needle

WHEN the owner of a radio-phonograph set places a record of his favorite concerto (or swing ditty) on the turntable, positions the pickup arm in which the vibrations of the needle are transformed into electrical impulses, and leans back to enjoy the sounds coming from the loud-speaker, he ordinarily imagines, provided he gives the matter a thought, that he is hearing a more or less faithful replica of what issued from the musicians' instruments. If he is half right, he has a better-than-average set. That is not so much a criticism of the state of technology in the radio industry as it is a compliment to the remarkable sensitivity of the normal human ear which, between the rumble of a kettledrum and the higher overtones of a cymbal, can detect frequencies ranging from approximately fifteen cycles to fifteen thousand cycles a second. The better phonograph records offered to the public are impressed with a range extending, roughly, from fifty cycles to eight thousand cycles, and if the record is played with the aid of a radio set of average quality, all that the listener hears falls between about two hundred to five thousand cycles, which range is still more than enough to assure him of intelligibility.

Probably the most important reason for this state of affairs is that the human ear, though it is capable of comparing with considerable delicacy, is not so adept at remembering and hence forms a miserable standard. An ordinary person is able to distinguish readily between a set which can reproduce as high as five thousand cycles and one which can go to eight thousand cycles, or between the latter and a flesh-and-blood orchestra. But he can also become quite satisfied with the poorer instrument if he has no better performance with which to compare it. Radio manufacturers therefore have been under no great pressure to produce high-fidelity sets, nor has the public shown any great willingness to spend the additional money which such sets would cost even when produced on a mass scale, as at present they are not.

If it is to reproduce all or even a large part of the frequencies which the human ear can detect, and to do so with little distortion of intensity or phase, the radio loud-speaker must have a range of response far exceeding that of any musical instrument. It must vibrate slowly but with considerable amplitude for low-pitched sounds and do the reverse for high-pitched ones. The only practical solution seems to be the use of two speakers, a massive one for the low notes and a small one for the upper frequencies. Even then, the machine can never duplicate the effect of a stage play or an orchestra listened to at first hand, since the reproduced sound is coming from a circle perhaps twelve inches in diameter, whereas the ears, with their acute binaural sense, know that the original sound came from an area perhaps eighty feet across and thirty feet deep.

The limits on the frequency range of records are set at present mainly by the nature of the needles and pickups currently in use. If the phonograph disk were to contain tones lower than it now does, either the grooves would have to be spaced farther apart, thus reducing the playing time of the record but keeping the energy generated by the needle vibrations at the present level, or more powerful amplifiers would be required, the latter alternative adding to the cost of the set. Frequencies higher than about eight thousand cycles would become lost in the needle scratch and surface noises present on the record regardless of needle pressure. Most of this noise is caused by the abrasive that is placed in the record material in order to grind the needle point to the shape of the groove and to increase the resistance of the record against the tremendous stresses formed under the point of the needle. In the last four or five years, average pressures of needles have dropped from about four ounces to about two-and-a-half ounces, but these are still far too high to permit the use of homogeneous substances like cellulose acetate or vinyl resins. Records of such materials, restricted at present mainly to those used in broadcasting studios, have relatively little needle scratch, but a single playing or at most a few playings with the ordinary home pickup would ruin

them. If the frequency range of phonograph records is to be greatly extended, it appears that abrasives must be eliminated, and they can be left out only if very light pickups are used. The term "light" is ordinarily confined today to pickups with needle pressures of about one ounce or less.

By reducing the intensity of the stresses under the needle point, which now frequently exceeds the elastic limit of the record material, a light needle-pressure greatly increases the life of a record and maintains the original freshness of the rendition over a long period. It also leads to the convenience of a permanent needle, ordinarily one with a diamond or sapphire point, for the delicacy of the pickup mechanism makes inadvisable the insertion of new needles by untrained fingers. On the other hand, a permanent needle point is relatively fragile, and, if cracked, it will damage a record more seriously than will an imperfect steel needle. Decreasing the needle pressure is also apt to increase the difficulties of obtaining proper tracking in the groove, and to lessen the strength of the electrical impulses sent to the amplifier, thereby necessitating greater power in that part of the radio set.

Nevertheless, though the problems in achieving greater fidelity in phonograph reproduction are considerable, so are the rewards. It is not that high-fidelity reproduction makes music or speech sound "better"; it is equally likely to make them sound worse by bringing out defects that would otherwise go unnoticed. The greater the similarity between original and reproduced sounds, however, the greater the ease of eliminating what is inferior or of appreciating subtle differences in style or interpretation — in short, the greater the opportunity for intelligent discrimination.

Less Be the Ties That Bind

AMERICAN timber engineering is receiving a powerful impetus during World War II, largely as a result of the desperate need of Central European engineers for improved timber-framing techniques during World War I. In the earlier conflict, the customary sources of high-strength American timbers were cut off and other engineering materials were almost completely diverted to military purposes; consequently, structural engineers had to make the best possible use of their own native timber, generally low in strength and small in size.

Since the weakest point in traditional timber framing was the joint, the problem resolved itself into finding better ways of transmitting loads from one member to another. The multitudinous varieties of notches, daps, and laps usually employed were wasteful of material and labor. Bolts, though easier to use, concentrated loads over small areas and crushed the wood. Hence some means of spreading the loads over larger connecting surfaces without increasing the sizes of timbers was required. Out of this realization came a great number of keys, friction plates, and cramps designed to increase the efficiency of timber joints and, consequently, of timber structures. Several of these devices, particularly split rings, toothed rings, and various types of claw plates, proved superior to their predecessors and came into general use in Europe.

During the late Twenties and early Thirties, American wood technologists became interested in the possibility of adapting these new connectors to the dwindling field of timber framing. Exhaustive researches were carried out to determine the types as well as the design procedure best suited to American conditions. Structural engineers soon began experimenting with the new connectors and learned the techniques of fabrication and assembly, which were radically different from the traditional methods of framing. Speed and economy came as a result of greater familiarity, and confidence grew as the number of structures using the new devices increased.

Simultaneously, a more rational basis was developed for determining allowable stresses for various timbers; clear-cut grading procedures, based upon thorough tests of all species and conditions of wood, gave engineers sound information upon which to make their designs.

Timber in old-time structural application. The Bridge of the Damask Girdle built 268 years ago, over the Brocade River in Japan, is constructed of wood held in place by intricate joints, not a solitary nail being used. The bridge has five arches, each 120 feet long, 16.5 feet wide, and, at its highest point, 34 feet above the water.

J.P.L Photo from Black Star

As a consequence of this research, timber structures, heretofore conspicuous for their massiveness, began to take on a new lightness and strength as well as to be more readily adaptable to newer, more complex types of designs.

The present emergency, bringing acute shortages of many engineering materials at the same time that defense construction is expanding, has greatly accelerated the use of timber. And the new techniques, pushed to the fore by the national crisis, are now assuming a major place in modern construction.

View on Television

TOWARD the end of January, television activity received a considerable impetus and degree of popular attention. The public could believe that full-fledged television programs would come into existence before the end of the year. Demonstrations of the latest technical developments, before members of the Federal Communications Commission as well as of the National Television System Committee in New York, gave conclusive proof that as far as technical perfection was concerned, television had reached a stage where commercialization was feasible.

The Columbia Broadcasting System, for instance, showed its method of color television, which produced three-color effects within the frequency confines of a single television channel. Scophony, Ltd., presented a mechanical scanning system which had been developed in England and which produced reasonably good images on screens as large as nine by twelve feet. The Bell Telephone Laboratories conclusively demonstrated that high-quality television pictures could be transmitted with inappreciable loss of detail over a complete wire circuit from New York to Philadelphia and return. The practicability of transmitting video signals for a distance of 168 miles over a radio relay system employing several automatic radio relay links was a contribution of the Radio Corporation of America. An all-electrical method of producing large-screen television images about as big as fifteen by twenty feet was demonstrated by RCA in a New York theater which had been leased for the purpose. Undoubtedly this demonstration was the most impressive of all television shows, for the members of the audience, which included many engineers who had themselves made important contributions to television, were enthusiastic in their praise. The large-screen system of RCA shows much promise for theater use.

In addition, transmission standards for television, which for several years had loomed as a Sisyphean labor, had been agreed to for a period of two years, so that a prospective purchaser of receiving equipment had reasonable assurance that his equipment would not become antiquated too prematurely. The summit of preparations for a television system which would finally fulfill long expectations was reached on July 1, when the Federal Communications Commission granted licenses for the commercial operation of television transmitting stations.

The first television station to obtain a commercial license was that of the National Broadcasting Company, which was followed by the Columbia Broadcasting System and, more recently, by the Philco Radio and Television Corporation in Philadelphia. Commercial stations are required to furnish at least fifteen hours of program material each week. Provided sponsors can be found who will incur the expenses, television programs may be handled in much the same way that radio broadcasts are offered to advertisers. As a result of the commercialization of television, at least one organization, Television Productions, Inc., has been established to provide potential talent, prepare suitable programs, and locate and co-operate with possible sponsors.

Nevertheless, in spite of this picture, which looked so promising, television has not cut much swath nor has it stimulated the public interest it might have. To consider recent public television disappointing would, of course, be wrong. Yet the spontaneous and widespread public interest which greeted radiobroadcasting in the early Twenties certainly cannot be said to have reached television; the public realizes that the type of television which will be commonplace and which will intimately affect its daily life is still to be achieved.

National defense requirements are undoubtedly the main cause of delay. Research engineers who would normally direct their activities to the further improvement of television equipment and technique are frequently found working on projects having greater importance to the defense of the nation. Manufacture of television receivers has come to a standstill, for even the presently much more lucrative field of radio, with a potential boom market, has had to give way to defense activities, so that civilian radio production, it is estimated, will be considerably below normal by the end of 1941. Only in the latter half of this year have some radio manufacturers awakened to the real significance of the priorities program, to the necessity of employing new designs, circuits, and components as an emergency measure rather than for style or mere public acceptance, to the shortage of technically trained personnel, and to the deficiency of adequate manufacturing and processing facilities for civilian requirements.

Of course, considerable television activity is going on in a few large metropolitan areas. The audience in the New York area, for example, has been estimated at 15,000. Most of this audience, however, is collected at bars, taverns, or motion-picture theaters; relatively few persons are entertained through the use of television receivers operated in their own homes. Important activities nevertheless are in process, and they will ultimately benefit television. But for television on a national scale, we must still look for that much-publicized corner around which, incidentally, lies posterity.

Cucaracha

BENEFICIARIES of *Blitzkrieg* are hard to find, yet at least one living creature is being made happy by Herr Hitler. Demands for greater steel production are diverting more fluor spar to steel mills, to be part of the slag essential to manufacture of the metal. Makers of insecticides also have relied on fluor spar, which can be converted into material for poisons. As supplies are diverted, the cockroach prospers. New York pest exterminators are reported as worried.

Mantles for Mars

Defense Requirements Call for the Textile Manufacturer's Greatest Ingenuity; New Fibers Replace the Old in Serving New Uses

By Edward R. Schwarz

FABRIC has grown up with man. For him it has been a symbol of authority when kings have sat enthroned in royal garments; a symbol of justice and learning when judges have donned their robes, and scholars their gowns and hoods; a symbol of piety when priests and ministers have arrayed themselves in cowls or vestments; and a symbol of power when marching troops have displayed it in their banners and uniforms. Fabric has reflected the spirit of the times — from sackcloth in seasons of repentance and sorrow to satin and velvet in times of prosperity and joy. It has offered man a medium for demonstrating mechanical ingenuity and for expressing artistic aspirations. Much of the soul of man has gone into his tapestries, his clothing, his canvas. Man's culture is revealed in his fabrics.

Nor is the use of fabric in national defense a new thing. The bowstring of our ancestors is just as much a textile as the powder bag for a modern long-range gun, and each serves efficiently to propel a deadly missile. Fabric has always defended its users against the elements. For centuries, felts have served alike for wearing apparel, for housing, and for armor against the slings of weather and the arrows of the enemy. Felts have housed Mongol and Tibetan; the Mongol fashioned them into circular structures, and the Tibetan into square or rectangular tents capable, in smaller sizes, of accommodating a family and, in the larger types, of housing several hundred soldiers. Accounts are to be found of the use of felt as body armor for protection of Caesar's legions against Pompey's archers. Even in the besieging and defending of cities, military engines were covered with hides and sackcloth to serve as a protection against destruction or damage.

Heretofore the sheep provided the wool for uniforms and blankets; the worm supplied the silk for parachutes and powder bags; the plant furnished the cotton and flax for airplane wing fabrics and for webbing. At present this country is really self-sufficient only in cotton and moderately so in wool. Yet, after all, cotton was not meant by nature to produce fiber for yarns and fabrics, but rather was intended for proper protection of the seeds. The flax plant produces fiber to reinforce its thin, long stems — as steel rods reinforce a concrete column — and was not supposed to furnish textile fibers. Similarly the silkworm builds a cocoon to protect the developing pupa, not to produce parachute canopies or satin dresses. And the sheep grows a protective coat, but its fleece was not intended to be spun and woven into cloth to make up for human inability to grow enough hair for full body protection.

Tortoise shell, wool, and feathers have a striking chemical similarity, and the textile manufacturer is fortunate indeed that the constant endeavor to modify the character of wool has not resulted in a feathered ewe or a shell-backed ram. Paradoxically enough, the inability of man to change radically the fundamental properties of the natural fibers defeats their ultimate permanence as textile raw materials. The chemist and the physicist hope jointly to evolve fibers which will be "tailor made" to specification and which will possess the advantages of the natural fibers (enhanced if possible) and avoid their disadvantages. No one fiber so developed will serve all purposes, any more than a good interceptor fighter plane will make a good bomber, or vice versa.

The perfect fiber for the perfect raincoat has yet to be discovered. As Vannevar Bush, '16, has said:

> . . . I have always envied the duck. He can dive under water and come up dry. Yet his coat is pervious to air as it should be for his good health, and it fits beautifully. The duck

Aviation adds greatly to defense requirements in textiles. Synthetic fibers are proving valuable in meeting these needs; in parachutes, for example, such fibers provide a higher strength-weight ratio than does natural silk.

Official photograph, U. S. Army Air Corps

Official photographs, U. S. Army Air Corps

For pursuit pilots, an electrically heated suit to be worn under regular flying clothes is being experimentally studied.

looks comfortable in his waterproof garments on a hot day, but the only raincoat I ever bought was hot, or it wasn't waterproof, and it leaked at the neck when the rain drove horizontally. . . . The duck can turn his head in any direction, and yet his covering on his neck lies marvelously smooth and sleek. Columbus found the Indians of Central America using feather garments; but even with their example we still do not emulate the duck, nor do we look natty and comfortable in the rain. It is certainly true that Solomon in all his glory was not arrayed like one of our modern women — not a queen but a woman of the people. We have progressed. Yet the lily can still exhibit more pleasing finish and coloring; . . . and the grass of the fields presents me with more alluring gradations of greens and browns than I find in neckties. . . .

This is not intended to be a criticism of the textile research worker, who, after all, has been studying his subject for only a short time, and who has produced some marvelous fibers and fabrics. Rather we should note that there is no field of human endeavor in which so much ingenuity and resourcefulness has been shown as in textiles, or which has brought more of lasting benefit to mankind. . . .

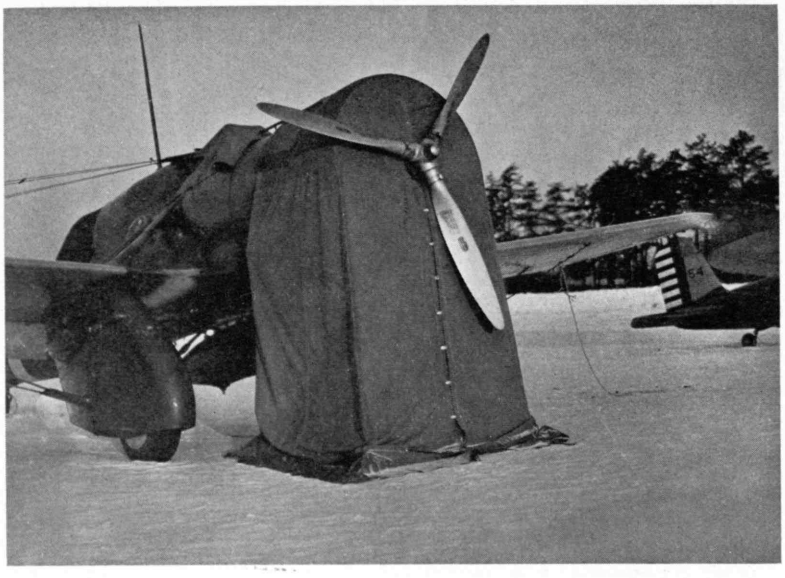
In our modern tempo that industry is in danger which is in a static state. Research, with its yield of new and better products, is not a luxury; it is a necessity, often as a defense against encroachment from without. The world in which we live is going to change, politically and sociologically no doubt, but also technically. We have no choice as to whether we will change with it, we simply have a choice as to whether we will change rapidly enough and sanely enough to remain part of the essential scheme of things, or whether we will pass out of the picture. Looms have operated in much the same way since the time of the early Egyptians. Will they always operate the same way? I do not know anything about looms, but I have lived in a modern research world for some time, and I know they will not. Will we ever make better fibers than nature, in place of what we may call, with due apologies to the hard-working organic chemists, our present weak imitations? Well, there are 100,000 or so known organic compounds, with all sorts of combinations and states of physical aggregation. We have X-rays, and polarized light, and ultracentrifuges with which to study them. There are quite a few thousand men in the world capable of constructive thinking. If we cannot beat a silkworm I am ashamed of the human race. . . .*

* The United States Institute for Textile Research, Inc., *Textile Research; a Survey of Progress* (Cambridge: Technology Press, 1932), pp. xiv–xvii.

In these times, man-made fibers must increasingly be depended upon to serve purposes of national defense. But, you ask, why textile materials at all? The answer is that textile fibers are amazingly *flexible* and *light* but withal have the *strength* of metal. The importance of this combination of properties may be realized easily if a moment's thought is given to a parachute: Suppose that this essential article of modern warfare were to be fabricated of metal. All over the canopy a multiplicity of tiny hinges or universal joints would have to be distributed to allow bending in any direction. Even if aluminum were employed, the task would be well-nigh impossible and the resulting parachute would be utterly impractical. The textile fiber has the required strength and is made up of long, slender molecules so constituted and so arranged as to give lightness, strength, and amazing flexibility throughout the fiber's entire structure. These properties, in turn, are conveyed to the yarn and the fabric, since the fibers are twisted into a series of helical springs by the spinning operations and the resultant yarns are bent into cantilever springs and into millions of corrugations by the act of weaving, braiding, or knitting.

Even though the normal properties existing in the natural fibers can be modified, processes such as mercerization, Sanforizing, and bleaching do not offer so fundamental a type of control as is available to the manufacturer of artificial fibers. He can modify the chemical constitution of the molecule and then arrange the molecules by polymerization or by heat treatment or mechanical conditioning until he attains the desired results. Stretch-spinning of rayon orients the molecules by a process of wet- or dry-working — akin to the hot- or cold-working of metals — in such a way as to produce a stronger, so-called high-tenacity filament of much greater value in mechanical usage than before. The orientation of Nylon after its polymerization can be "set" by heat treatment not too different from that used for other engineering materials. The strength,

Cotton supplies cloth for covering airplane control surfaces, balloon cloth, webbing, tape, as well as engine covers like this, used to reduce time in warming up a cold engine.



elasticity, creep, and shock-load properties can thus be altered profoundly. Inclusion of nitrogen with the carbon, oxygen, and hydrogen may be said to produce a sort of fiber alloy with properties and uses just as different as those of a molybdenum or tungsten alloy in contrast to the original steel. Much of modern textile research is devoted to this phase of textile technology. Such investigation is now under way, among other places, in the textile division at the Institute where, in particular, the work is aided by the Slater Fund established for the study of aeronautical textiles.

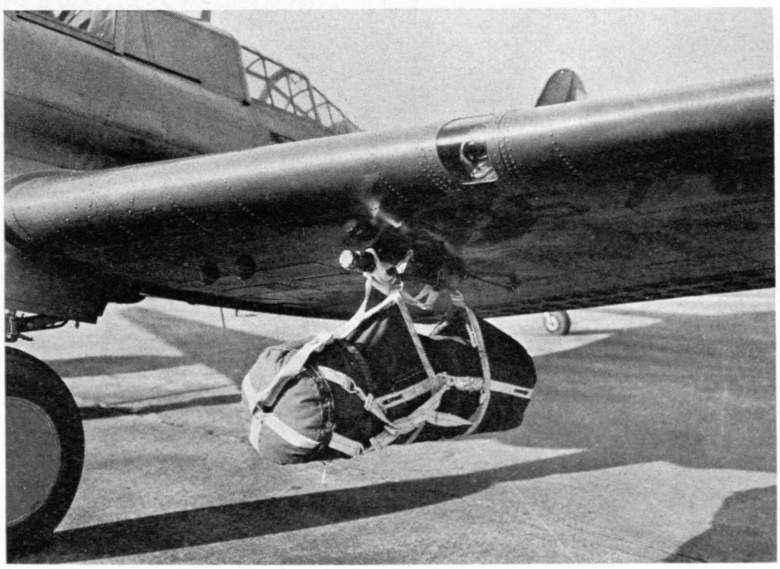
Earlier workers were concerned almost entirely with investigation of tensile strength and simple stretch, and failed to understand the fact that textile fibers are much more plastic than elastic and possess a "memory" for past experiences which conditions future behavior. Difficulties in earlier testing techniques are shown to have been due in no small degree to ignorance or lack of control of the prior stress-strain history of the specimen. Certain irregularities commonly encountered in manufacturing not only natural fibers such as wool and silk but also man-made fibers are traceable to the same source. Fibers remember past strains and stresses, and the memory is good or bad depending upon how long ago the stress acted and how severe and prolonged the action was. Just as a man's memory may be wiped out by a shock or a blow on the head, so stresses and strains may be used to cause what may be termed "fiber amnesia." As a man may be rendered unconscious by means of drugs, so, too, fibers may be "anesthetized" by means of heat and moisture and thus made to lose their memory in whole or in part. The homely act of pressing one's trousers and the industrial process of scouring woolens and worsteds have in common the end of causing at least temporary fiber forgetfulness. The ability of fibers to remember and forget is now being studied at the M.I.T. as a part of the research program of the Textile Foundation, Inc. Extremely interesting and important information is being obtained.

Micro-analytical methods, also largely developed under Textile Foundation auspices, are well advanced, and, in addition, attention is being devoted increasingly to the development of apparatus and techniques for the evaluation of flexibility, repeated stress effects, rate of load application, permeability to gases and liquids, heat transmission, compressional resilience, abrasive resistance, for color measurement, and, particularly, for statistical handling and interpretation of data — all to the end that more intelligent specifications for textiles can be written and existing specifications can become more meaningful.

Cotton fabric is used in coveralls for fliers. Nylon or Nylon with cotton has replaced linen in parachute webbing.

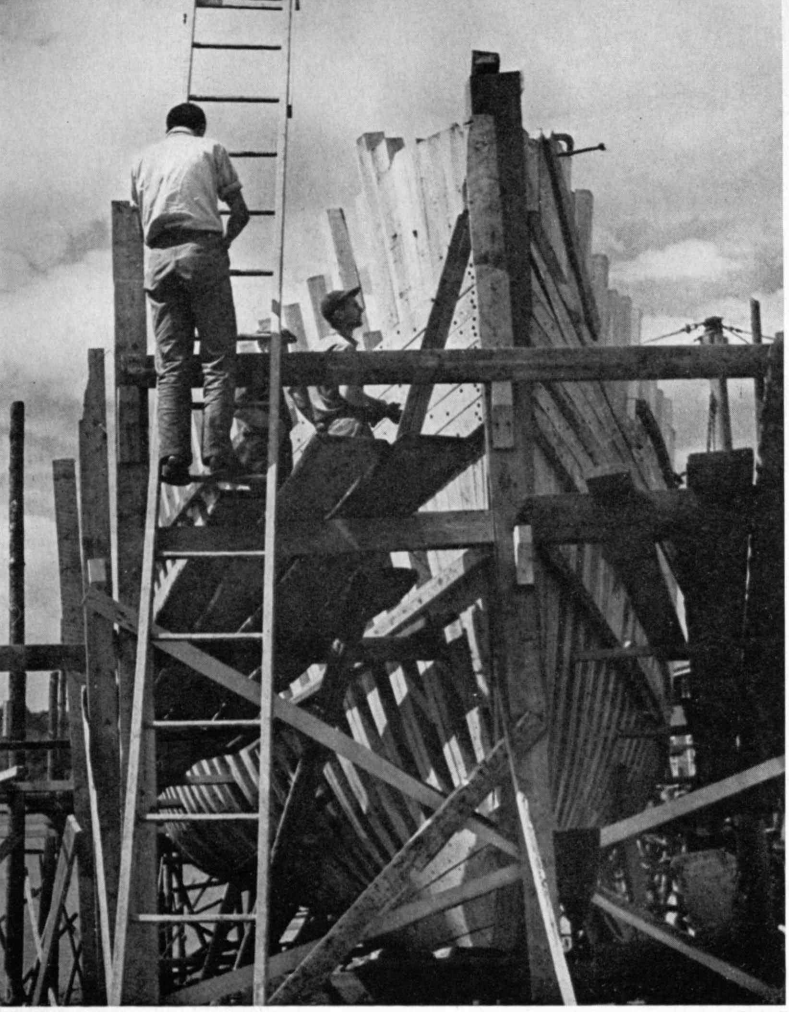
In the absence of standard equipment and procedure for these determinations, the establishment of working tolerances and intelligent defense specifications is sadly handicapped. For too long, an inordinate amount of attention has been devoted to simple strength and stretch readings, whereas many other properties are far more important as a measure of quality or suitability for a given purpose. The present defense need, coming as it does when these formerly neglected properties are being studied in a number of laboratories, will do much toward stimulating support for such research and will, as a result, benefit by better textile yarns and fabrics.

Felt pads protect guns, ammunition, and supplies packed thus to be parachuted to earth with parachute troops. Canopies are of characteristic colors to identify their loads.



During 1940, more than eighteen million pairs of socks were supplied to the government. The Philadelphia Quartermaster Depot alone inspects between one million and two million yards of fabric each week; the materials range from mosquito netting through electrically heated underwear for aviators to felt pads for parachute-troop equipment. Between July, 1940, and April, 1941, almost half a billion dollars' worth of textiles was purchased by that depot. The problem of supply is not an easy one. Approximately five months are needed from the time of purchase of textiles to issuance of the finished product to the soldier. Usually about a month and a half are required to get satisfactory samples; about two or three months to make small deliveries; and then another month and a half to get peak production from the converter.

More textiles are used in aviation alone than is appreciated (*Continued on page 42*)



Betty Foxwell

Wooden Ships and Maine Builders

By Richard Hallet

MAINE lies in the embrace of numberless arms of the sea, and it would be strange if, discovered and colonized by seamen adventurers, Maine had not early turned her genius — and her oak — to ships. As early as 1607, Captain George Popham, brother of England's then lord chief justice, landed and founded a village at the mouth of the Kennebec, building that same winter the first ship produced by the New World — a pinnace of thirty tons burden — to explore the coast in.

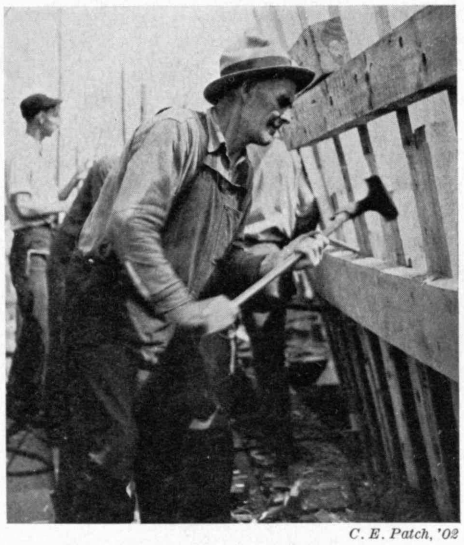
From that time forth the Kennebec was known as a shipbuilding river. Its settlers were shipwrights and seamen; oak, spruce, and pine grew thick on its banks; and besides timber for the native or "country" ships, these early shipbuilders cut and shipped to England vast quantities of ship timbers and spars to be incorporated in the Royal Navy. The king's broad arrow slashed into a tree set it apart, enlarged its destiny, and protected it from local uses.

Contract shipbuilding began in 1761, when Captain William Swanton built on contract the *Earl of Bute* for a Scotch merchant; and Maine from that time onward has never lost her sea legs. From 1783 to 1938, 834 full-rigged ships, 248 barks, 612 brigs, and 1,498 schooners have been built in the Bath district alone. And Bath has recently launched her forty-first destroyer for the Navy; but that, of course, is another kind of building. Wooden ships that ran over 250 feet in length were not successful; beyond that, steel became necessary. The ship industry brought in its train auxiliary industries. Maine, in the course of building wooden ships, had cordage works, block factories, trunnel houses, sail lofts, foundries, and forge shops for ironwork and anchors. The old firms not only built ships but sailed them and found them profitable. The Pattens of Bath traded to the Black Sea in the Crimean War, and a single voyage returned them more than the price of their ship.

Above:
The bow of a 92-foot trawler under construction at the Morse yards in Thomaston, Maine

After the Civil War we Americans were busy with westward expansion, and our sea interests dwindled to shadows of their former selves. The chips grew gray in Maine shipyards; the bed logs rotted; the steam boxes fell apart. Apple trees grew up in the old ways, and the Kennebec and the Penobscot ran unvexed by keels to the sea.

The last War brought a short revival followed by swift abandonment. Nothing but the yacht yards on the coast was left, and for twenty years the art and science of wooden shipbuilding have been concentrated and kept alive in those yards. Now another war, or threat of war, has saved this art perpetually in danger of being lost forever in an age of steel and steam. Cluck of adz and knock of calker's mallet again make music on the Maine Coast, where in a dozen yards the Navy has let contracts for its wooden mine-sweepers. The young shipmen of a quarter-century ago are now the old hands, and they are teaching the young hands how to go to work.



There are still skilled adzmen; here is one at work in a yard at Rockland.

C. E. Patch, '02

A wooden ship takes her start in the woods, in the dreaming heart of an acorn, with a seafaring destiny communicated to it by the forest mold. The acorn grows into an oak, and the ship gangs claim it for their frames — the ribs of the ship. Oak for keels and frames, for stem and stern pieces (though some builders say that beech or birch will do as well); then hackmatack for the ship's knees that support the deck beams, and white pine or Douglas fir for the planking; pine for the decks, and spruce or pine for the spars. The trunnels — the treenails, or wooden bolts, with which old wooden hulls were pegged together — were usually of locust. Like any wood-wind instrument, a ship is made of carefully selected woods.

Clyde Merrithew of Stockton, a spar builder by profession but an all-round shipman too, explained to me how a ship's hull got its start.

"They started a shipyard here in Stockton in the last War," he said, looking out on Penobscot Bay through his kitchen door. "And they hired George Wardwell for master builder. There wasn't a building big enough for a mold loft, I guess, so George used an old barn floor. That floor was pretty rough. A lot of horses' shoes had splintered it, but George made out with it somehow.

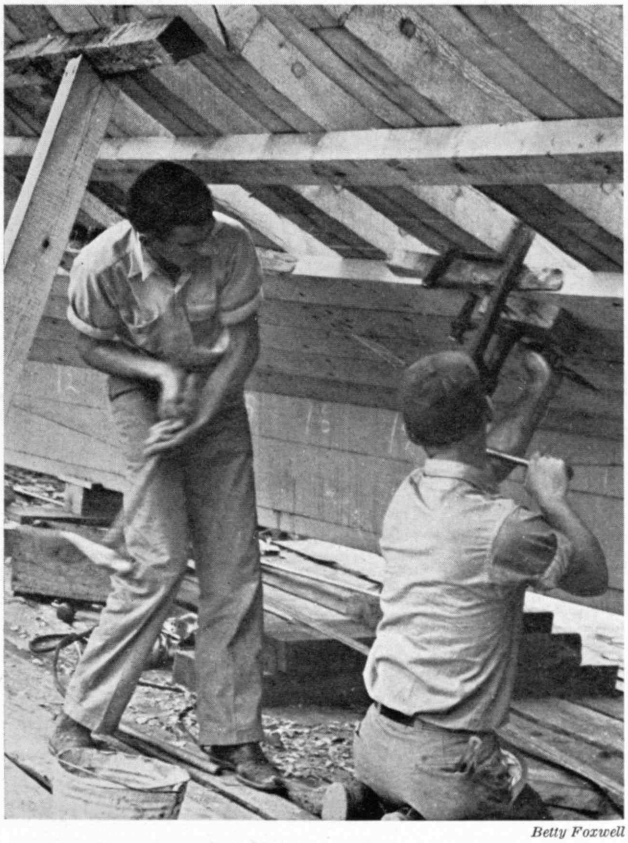
"He had a model whittled out, and he took his lines from that. Drafted it out a quarter of an inch to a foot. He'd yell the settings-off to me, and I'd batten 'em out to full size. I laid out the forward body of the ship and then the afterbody, right there on the barn floor; and I wouldn't wonder if there was flavor of horse to that ship right to the end of her days.

"George had a center line for the ship's keel, and he went the right distances off from that center line, shoved a line of ice picks into the barn floor, and bent the battens around them. Or I'd bend the batten myself. I'd stand back and look to see that it had no quick yanks in the curve of it, and then I'd run a pencil line right along against the batten on the barn floor. Each one of those lines stood for a ship's frame, and we had to get 'em accurate."

Down in the shipyard, men scarfed together the oak pieces that made the keel and tipped it up on the ways; then, having the patterns for the frames right from the barn floor, they bolted the frames together on a platform at the ship's stem, dubbed them into shape with adzes, hoisted them with tackles, and slid them down the keel one by one. So the ship's skeleton was made, and then she was ready for the planking.

"Planking is quite a particular job," Merrithew informed me. "Planks are a good deal like old-fashioned corsets. You're going to have the shape the corsets give you, and the ship has got to have the shape the planks give her. Of course the ship's frames have something to say to her shape, just like ribs have something to say to the corsets, but all the same a plank liner's got to see that the planks snug down good and make a right curve.

"He's got to see that the planks come down slashways at the stem and still with not twist enough to wring the heart out of 'em. Hot plank will lay down like



Betty Foxwell

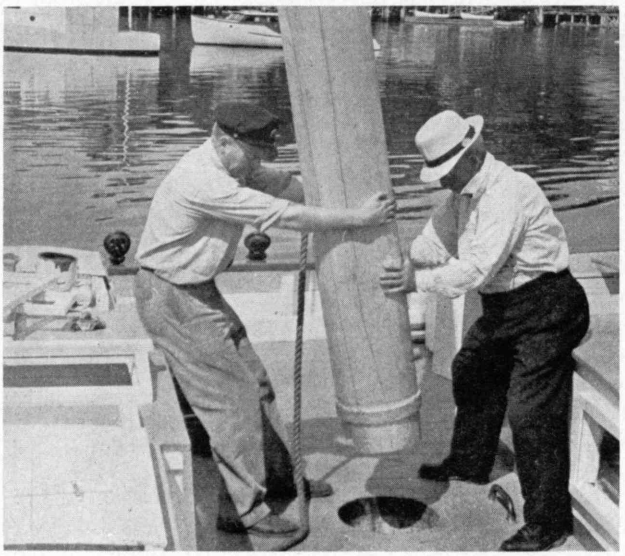
Fastening a plank just above the keel of a Thomaston trawler: "When you come to sledge it home . . . it's got to come wood to wood on the inside edge."

Betty Foxwell

Lining out a strake, "where all the mathematics in the world won't take the place of judgment." Measurements must be exact for planks to "snug down good."

Betty Fozwell

Spar makers at work at Camden, Clyde Merrithew at the right



Betty Fozwell

A mast made by Clyde Merrithew being stepped, Camden Harbor

butter in a tub, but still there's a limit to the twist. And you've got to use a lot of judgment with planks. Where the ship bulges, at the turn of the bilge, you have to use wider plank and gain up what you've lost in the first few strakes. You have irregular areas there, and they make a gradual difference in the width of the planks in a long curve. You need a lot of calculation, and even after you've taken measurement every four feet, there has to be a trick method of snapping a chalk line just so to represent the twist of the plank when you come to sledge it home and twist it onto the frames. It's got to come wood to wood on the inside edge, and that bevel can turn into a pretty complicated curve. It's just one of those cases where all the mathematics in the world won't take the place of judgment.

"I remember a year or two ago a friend of mine, captain of a coaster, wanted me to set a new plank in place of a dozy one right down at the bilge. He went to Bucksport for that new plank, and he came back with just one plank, mind you. That was good old State-of-Maine thrift. There his vessel was, on the beach, and the tide gone out, and he depended on me not to ruin that one plank. If I did ruin it, his ship would fill and sink when the tide came back.

"So I set to work. Most people would have looked at that plank and said it wouldn't fit the gap on the frames any more than a crooked shoe would fit a man's foot. It didn't look the least like the hole it was going into, and even my friend the captain began to shake his head over it. I lined it up, hewed and beveled, and got ready to bolt it on. By that time the tide was nearly back to the ship's keel again. I said to the captain, 'What if this plank don't go now?' And he said, 'By Gorramighty, she's *got* to go.'

"Well, go she did, but we had to finish calking the seams standing in a dory."

The 97-foot mine sweepers now being built for the Navy along the coast of Maine are sturdy wooden hulls, chunky and high forward and packed full of machinery.

"How about skilled workmen?" I asked my friend Bill Parks of Parks and Gamage at South Bristol.

"We started with a good nucleus of skills," Parks said, "and the old hands are teaching the young ones. Some of these young fellows are showing very good aptitude for ship tools."

The young fellows were brown and trained down hard, with a good showing of those muscles with the Latin names, like *serratus magnus* and *latissimus dorsi*. They looked hardy against a background of yellow ships' frames hoisted up into an August sky; and the smell of pine and sour oak and tar and oakum is better in the nostrils of the old shipmen than the odor of violets or attar of roses.

The older men go back to a day when the master shipwrights, the master blacksmiths, the master workmen generally, wore long black coats and stovepipe hats to distinguish them — just as John L. Sullivan did when he was pugilist champion of the world. A plug hat was the mark of a mastermind.

And the older men remember the oxen that used to drag keel pieces and planking along over a yellow ocean of chips, and the horses that plodded round the horse crabs, and the vertical wooden windlasses that hoisted the masts into place.

Bill Hiscock is one of that generation, a master ships' carpenter with sawdust in his brows. He can do anything around a ship — dub a frame, line a plank, or calk a seam. In the old days, he says, all these were separate trades like guilds. Town competed with town for a ship job like planking or outboard joining. Plank workers would finish planking a ship and shift along to another yard where a ship had just been got into frame and was ready for planking. It was so the calkers worked, and the broadaxmen, and the adzmen. Once an adzman always an adzman, and the adzmen came to have a wonderful skill and could take an oak shaving no thicker than rice paper.

Nowadays there is more band-saw work and less of the ax and the paring adz. More sawdust and fewer chips are found in a modern yard. Electric drills make the holes for the bolts, but hand augers are still used in making the holes for plank and (*Continued on page 40*)

Dividing the Work

In Times of Industrial Activity, Ways of Meeting Unemployment Problems May Be Perfected

By Herbert S. Swan

WHEN factory chimneys all over the country are smoking hard to keep up with unprecedented volumes of work produced by the nation's defense needs, discussion of schemes for spreading jobs among employees in slack times seems at first thought superfluous. But in times of full employment a rare opportunity exists for detached analyses of ways to meet the problems of unemployment, and experience with past periods of three-shift operation to fill unusual needs suggests the value of considering now the expedients to which yet another *post-bellum* slack interval may force us.

In times of depression the apportionment of jobs has become the classic method of dealing with unemployment. So much emphasis has been placed upon the division among workers of such work as remains in periods of receding employment, that sight has almost been lost of the fact that measures of this kind may, instead of contributing to the solution of unemployment, actually aggravate and prolong the problem.

Each plant in an industry evolves in time certain fixed rules for the distribution of work among employees during slack periods. Work may be divided equally among all workers in each department, share and share alike, or work may be allotted on the principle of seniority, the last employee hired being the first laid off, and the first laid off, the last re-hired.

Until the depression occurred, most plants which had formulated any rule on the subject followed the seniority principle — each employee gained security in his job in proportion to length of service. But when the depression swept over the country, the need of large groups of people for relief was often held to transcend the seniority rights to steady jobs acquired by older workers. As a result, all employees, both new and old, were placed on a parity in their right to work. In hundreds of plants the seniority principle was abrogated and the stagger system, or share-the-work principle, instituted. Initially this change was effected in large part through the insistence of the national administration; now the stagger system has become a standard provision of many union contracts.

The result is that union contracts today commonly provide for equal distribution of work among permanent employees of a plant. The regulations of the Federation of Dyers, Finishers, Printers and Bleachers of America, an affiliate of the Congress of Industrial Organizations, show clearly how this idea is carried out in practice.

The contract of the federation provides for equal distribution of work hours among permanent workers in each department by weekly periods. At the end of a pay-roll period, any inequality in work hours among members of a department must be corrected during the following pay-roll period. Additional help may not be hired until regular employees in that department are working at least 75 per cent full time. But when a new employee is hired to fill a vacancy in a position held by a permanent employee, the new employee becomes a permanent employee and shares with all other permanent employees in equal distribution of work hours in his department. Though only recently appointed, he is entitled to as many work hours a week as the employee oldest in length of service.

Union leaders insist upon the necessity of maintaining the stagger system in order to prevent discrimination and favoritism, arguing that but for the stagger system, relatives and friends of the employer or foremen would in slack times obtain all the work and others none. Dividing work gives all something to do and tends to cushion the cruel blows visited upon workers in periods of business stagnation. In slow periods during the past few years the stagger system is said to have afforded permanent employees in the finishing industry on the average about two days' work a week. On this basis, but for the stagger system, unemployment conditions in the industry during lowest periods of the depression would obviously have been appreciably worse. Because of the share-the-work principle many workers have no doubt been spared the necessity of going on either relief or W.P.A. Only when employment has fallen below a certain level has supplementary relief been necessary.

Yet the assertion is frequently heard even among employees that the stagger system penalizes the older employee to the advantage of the newer, that it takes work which rightfully belongs to the man who has been with an organization for years and gives employment to the man only recently hired by a plant. The average person who has worked years in a shop is not altogether happy with the stagger system, as is evidenced by the complaints made when employment, as a result of the rule, falls below the amount necessary to maintain a decent standard of living. The general feeling appears to be that work of at least thirty-two hours a week is necessary to keep employees reasonably happy. Even union leaders confidentially admit that skilled and conscientious workers with many years of service in an industry, having received but two or three days' pay weekly over a period of months as a consequence of the work they have been obliged to share with newer employees, become so disheartened that they leave their employment to seek jobs in other lines of business. Employers corroborate this fact,

stating that many of the better and more efficient employees have, because of the stagger system, found the finishing industry, for example, so uninviting and unremunerative that they sought employment elsewhere.

Employers insist that the abolishment of the stagger system would reduce production costs in slack seasons, with the result that the competitive position of the organized portion of an industry would be vastly improved. More work being brought to unionized plants, total employment and pay rolls would be greater than now. Increased responsibility would, moreover, be placed upon management, obliging managers to bestir themselves to bring in more new business. By giving up the rule, labor would, in effect, be helping itself. In addition, abolishment of this stagger system would make for more contented workers by giving steady employment to the irreducible number needed by the industry. Whatever may be said in favor of the stagger system as a method of distributing work during an acute crisis, employers assert that as a permanent proposition it simply cannot be justified, for competitive industry is neither relief nor W.P.A.

The effects of the stagger system are not evident in busy seasons, when all permanent employees are working full time. Only when work falls off does the stagger system become operative and is work shared among permanent employees in a plant. If coupled with the right to hire and fire, the stagger system would be divested of its worst faults, according to employers, for then they could discharge a man who dawdled or wasted time. But when an employer has no right to fire, the employee, being only human and desiring as full a pay envelope as possible, stretches out operations, slows down movements, and reduces output. Just when, because of reduced volume of business, every energy should be strained to reduce unit costs to maintain the competitive position of local plants, labor costs for each unit of product are increased to such an extent by the stagger system that they more than offset economies produced in other directions. Even normal unit costs are raised, since wage scales under the stagger system, being based upon part-time employment, are likely to be placed upon a higher level than is the case where the employer is in a position to adjust employment in proportion to business on his books.

Despite all the practical objections to the stagger system in competitive industry, the system recognizes two social principles which are ethically unassailable: the obligation of the community to use all workers, and the right of all persons to work. The great shortcoming of the stagger system is that it, in seeking to effectuate those principles, confuses the functions of government with those of competitive enterprise. In shortening hours to spread work, the share-the-work principle forces contributions to unemployment relief by those least able to make them. Unemployment and underemployment are, it is true, more than individual catastrophes; they are a disease afflicting the whole social and economic structure of a community. But it is the responsibility of government to provide security for its citizens. It is the responsibility of business not to provide relief employment to the needy but to carry on business operations economically and profitably.

In dividing a diminishing volume of work, the stagger system so reduces the hours of work and consequently the pay of each worker that earnings frequently fall below the subsistence level. Since all workers suffer proportionate reductions in purchasing power, the demand for goods above subsistence level declines in a severe depression to a point where whole industries are seriously involved.

Ordinarily seniority, the other method of attack, implies that the last employee hired is the first laid off and the last laid off is the first re-hired, though the rule is modified in different industries. Seniority, its proponents hold, tends to build up a permanent personnel and, by holding out to workers a promise of security based on length of service, makes for both a more skilled and a more satisfied corps of workers. Since advancement up to a certain point proceeds automatically with length of service, wage controversies are reduced, with the result that turnover in labor is also reduced, particularly among older and more skilled workers. Without seniority a man's security in his job diminishes with increased age. Unemployment, therefore, tends to center among the oldest and least adjustable workers in industry. With an aging population, that a maximum stability be accorded the employment of older persons is obviously socially desirable. Statisticians say that by 1980 we may experience a gain of but about 3,000,000 population in the age groups of twenty to forty-four — as against an increase of nearly 15,000,000 population from forty-five to sixty-four. At present persons between the ages of twenty and forty-four constitute 66 per cent of all persons between twenty and sixty-four. Estimates show that by 1980, they will constitute but 56 per cent of the population between ages twenty and sixty-four.

With the seniority principle, burdens of unemployment fall with full weight upon younger employees in industry, upon employees not only young in years but young in length of service, upon employees with lowest rates of pay. This catastrophe occurs at a time when many are just getting started in an industry, when they are equipping themselves with the skill and technique necessary for them to become permanent members of the industry. By concentrating the full impact of the downturn in the employment cycle upon junior workers, seniority tends to discourage the entrance of new blood into an industry. In raising the general age level of employees, a depression may, if prolonged, weed out all but the very old employees in a plant.

One of the worst disadvantages of the seniority system, viewed in the interest of the individual plant which pays time rates, lies in the fact that each layoff, in discontinuing the services of another group of low-paid employees, progressively raises the unit costs of the article manufactured. Differential labor costs develop among individual plants presumably subject to the same wage rates. A new plant in the field, having few long-term employees, does not through successive layoffs increase its unit costs as rapidly as an old plant in the field with a relatively large number of old employees receiving wages in the higher brackets. Seniority may therefore favor newer as against older plants in an industry. (*Continued on page 52*)

Wings for a Nation

Government's Share in the History of American Aviation Has Been Expressed through Many Means

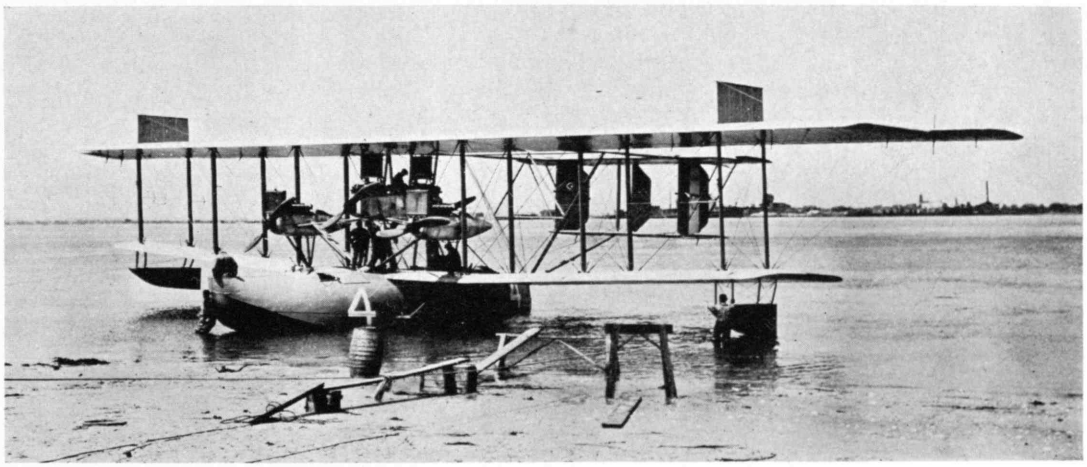
By L. Welch Pogue

EVOLUTION of the airplane from a weird device sputtering across the countryside barely over the treetops, to the gleaming streamliner which lends wings to the commerce of a nation is one of the most vivid stories of the past thirty-odd years.* To the writing of that tale — primarily the work of unassuming private citizens — the government of the nation has contributed important chapters, the first of which was set down before the turn of the century, when in 1898 and 1899, at the request of President McKinley, the Board of Ordnance and Fortifications allotted two grants of $25,000 each to Samuel Pierpont Langley for the construction of a full-scale flying machine capable of carrying a pilot. Langley had, two years before the first grant, demonstrated a power-driven model which flew without a pilot for distances as great as 3,200 feet. Though the machine which he built with the assistance of the government's allotments was an enlarged copy of this model, new problems were presented in its launching, and efforts at flight were not successful. As a result of the deluge of public criticism which followed, the government deemed it advisable to discontinue the experiments.

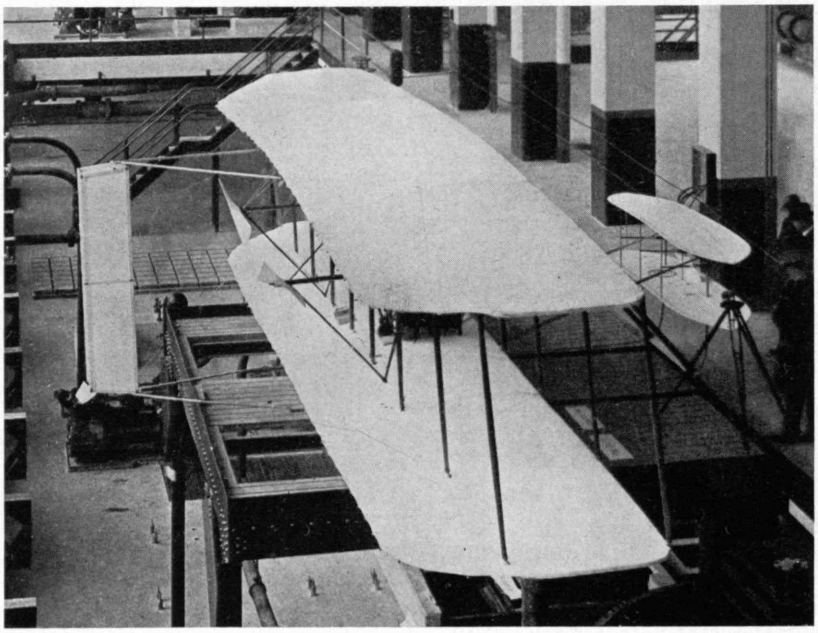
In the years since then, the government has contributed to the development of aviation through the Army, the Navy, the Post Office Department, the National Advisory Committee for Aeronautics, the Weather Bureau, the Bureau of Standards, the Coast and Geodetic Survey, and the Civil Aeronautics Authority, including the Administrator of Civil Aeronautics and the Civil Aeronautics Board. The list would be larger if indirect contributions were included. For example, the Department of State negotiates for landing rights and aeronautical privileges abroad, and the Federal Communications Commission co-operates in the field of radio.

Only a few days after the failure of Langley's second attempt to launch his machine, Orville and Wilbur Wright in 1903 accomplished sustained flight with a heavier-than-air machine, but considerable time was to elapse before the government took an active interest in their work — a circumstance not difficult to understand in the light of the outcome of its first experiment. After further work, the Wright brothers developed a machine which would stay in the air for considerable distances, and in 1905 they wrote to the Secretary of War, on the advice of their Representative in Congress, expressing their willingness to give the United States Government the first opportunity to control all rights to their invention. In October, 1905, a reply was received from a major general of the General Staff, who was also the president of the Board of Ordnance and Fortifications, saying that the Board found it necessary to decline "to make allotments for the experimental development of devices for mechanical flight," and had determined that, before suggestions with that object in

* The author wishes to acknowledge with thanks the valuable assistance of Edwin R. Teple, a member of the staff of the General Counsel of the Civil Aeronautics Board, in the preparation of the material for this paper.



The Navy's NC-4, designed by Jerome C. Hunsaker, '12, was the first aircraft to cross the North Atlantic. The historic flight commenced on May 16, 1919, when three ships took off from Trepassey Bay in Newfoundland. NC-4 reached Horta in the Azores without incident, went on to Lisbon — arriving May 27 — and then to Plymouth, thus completing the first heavier-than-air crossing between the United States and England. NC-1 was forced down 200 miles west of the Azores, her crew being rescued by a Greek steamer. Landing at sea in a fog, NC-3 taxied 205 miles on the water to reach Ponta Delgada in the Azores.



On exhibition when the Institute's Cambridge home was opened in 1916, the original airplane constructed by Orville and Wilbur Wright. For this exhibit it was assembled for the first time since its memorable flight.

view would be considered, the device must have been brought to the stage of practical operation. Later in 1905 a captain wrote that the War Department did not care to formulate any requirements for the performance of a flying machine or take any further action "until a machine is produced which by actual operation is shown to be able to produce horizontal flight and to carry an operator."

The attitude of the War Department changed, however, when news that certain French Army officers were interested in the machine developed by the Wright brothers reached this country through military attachés and others stationed in European capitals, and in 1907 the War Department established an aeronautical division in the office of the Chief Signal Officer. During the same year, the Board of Ordnance and Fortifications asked the Wright brothers what would be their price for a flying machine. In 1908 arrangements were completed for the purchase of a plane if one was produced which could fly with a pilot and one passenger and could meet certain other requirements fixed by the War Department. A successful demonstration of the Wright brothers' plane was made at Fort Myer, Va., early in September, 1908, and the final trials on July 30, 1909, sold the Army an air service.

The nation's entry into the World War marked a new era in the development of American aviation. Expenditures and allotments for military aeronautical purposes from the date of our entry into the War to June 30, 1919, totaled more than a billion dollars. The availability of this money had a tremendously important effect in increasing the development of more efficient types of planes and quickening the recognition of the various uses to which they could be put. Under the pressure of preparing for war, the European countries had progressed more rapidly than this country in aircraft design, and their latest models were made available to our manufacturers for study and reproduction in quantity. The Liberty engine, which represented an important advance over anything which had theretofore been produced in any quantity in this country, was developed by our own manufacturers as a part of the war effort. During the War, 11,760 airplanes and 30,630 aeronautical engines were produced in the United States.

Although this development related primarily to military craft, it must be remembered that not until the airplane reached a more advanced stage in the hands of the Army and Navy did commercially minded men begin to appreciate its possibilities. Prior to the World War, only fleeting gestures had been cast in the direction of organized carriage of mail and passengers by air. As early as 1911, mail pouches were carried short distances, without cost to the Post Office Department, as a feature of aviation meets, and in 1914 a passenger service between St. Petersburg and Tampa, Fla., was maintained for about three months. This was pioneering activity, but it hardly amounted to regular transportation service.

Serious air travel came into existence when the Post Office Department inaugurated an air-mail service between New York City and Washington, D. C., on May 15, 1918. Congress had appropriated $100,000 in 1917 for the establishment of an experimental air-mail route between these two cities. Some delay had been encountered in locating satisfactory landing fields. For Washington, the landing site finally selected was a polo field, and for New York the infield of a race track on Long Island was used. The first departure from Washington, which was attended by appropriate formal ceremonies, was hardly a complete success. At the last minute it was discovered that the mechanics had forgotten to fill the fuel tank. With a supply drained from the tanks of other aircraft, the pilot finally got away but then missed his route and wound up on a farm in southern Maryland. The plane from New York, however, made good time, and its mail load, following transfer to another plane at Philadelphia, was landed in Washington only three hours and twenty minutes after the departure from Long Island. Before the conclusion of the first fortnight the operation was running smoothly, and at the end of May the Post Office Department reported that more than one-third of the total number of scheduled trips had been completed within four hours. The War Department flew the mail planes until August 12, 1918, when the Post Office Department took over the operation of the route. Although bids for the construction of five postal planes had been requested and opened early in 1918, the Army's offer to fly the mail made possible the immediate laying of plans to get the service under way. Shortly after taking over, the Post Office Department obtained new planes designed especially for the purpose, but most of its pilots had been civilian instructors in the Army. (*Continued on page 46*)

Old-Time Drills

The Art of Piercing Metals as Practiced in Earlier Days Can Be Learned Only with Difficulty

By Leroy L. Thwing

Fig. 2. A china mender using a bow drill

WE commonly say that we "drill" holes in metal and "bore" holes in wood. To machinists, a drill is a tool for drilling holes in solid metal, and a boring tool is a tool for enlarging and finishing rough holes. Technically, reamers are boring tools, since their cutting edges are usually on the side and not on the end.

Prior to the Nineteenth Century, drilling holes of a half-inch or smaller diameter in metal was simple, for the tools were not complicated and the process called for no special skill, although it was doubtless arduous and time consuming. The method being so simple and so well understood, no one thought written instructions were necessary, and consequently we do not know today what kinds of drills were used, how they were shaped and sharpened, or all the ways they were rotated or driven. Needless to say, they were all driven by hand — or at least by man power. No power-driven drilling machines for metals existed until well into the Nineteenth Century.

Between 1100 and 1500, quite a number of manuscripts were written on the subject, and sketches were made by engineers. Some of these have been preserved and have been published. During the Sixteenth, Seventeenth, and Eighteenth centuries — after the invention of printing — a surprisingly large number of well-illustrated books on machinery were published. A considerable proportion of the sketches and illustrations which they contained were rather visionary and beyond the capabilities of the mechanics of their time, but two or three of the books were quite practical. Agricola's *De Re Metallica* (1556) is a good example of the latter type. (It has been translated by former President and Mrs. Herbert Hoover.) None of the books, however, with one exception, has any description of the tools and methods used in drilling holes in metal — solid metal. That exception — which contains the earliest description known to the writer — is Charles Plumier's *L'Art de Tourner*, published in 1701 and later translated into German, Russian, and Spanish. The book has complete instructions, with detailed and assembled scale drawings, for building various types of lathes and other machines.

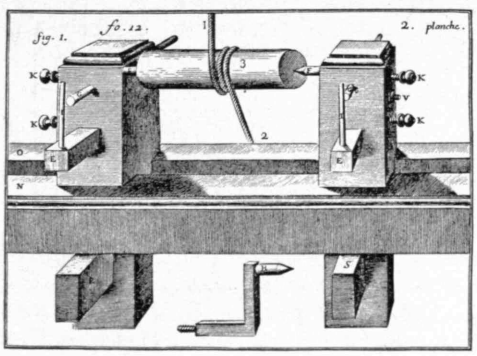


Fig. 1. Seventeenth Century wood-turning lathe, from Plumier's L'Art de Tourner

In lathes of that period, the work was not rotated continuously in the same direction but was turned back and forth in alternate directions, revolved by a cord wrapped around it, as shown in Fig. 1. One end of the cord was fastened to the tip of a spring pole attached to the ceiling, and the other was connected to a treadle. When the turner thrust his foot down sharply on the treadle, the work turned a few times toward him and he set his chisel into the wood. Then the spring pole lifted the treadle, the operator backed off his tool, and the work turned backward for a few turns. When anything was to be drilled or turned on the end of an arbor, the footstock of the lathe was removed and replaced by another in which the arbor had a bearing — a sort of center, or steady, rest. On the end of some of the arbors was a screw which would hold a disk of wood fast for turning — as is done today. Such a screw was made separately and soldered into a hole in the end of the arbor.

Plumier, in describing the method of drilling a hole for this screw, also describes the drill. His is not, to be sure, much of a description, but if Plumier's words could be accurately translated we would know what sort of drills were used in the Seventeenth Century. Plumier says: ". . . Take a small drill with a square point [or cutting edge?] and a double bevel, like those which locksmiths use. . . ." The French text is: ". . . *Vous prendrez de petits forets à nez quarré, & à double bizeau, comme ceux dont se servent les serruriers. . . .*" In the German edition of 1776 *nez quarré* is translated *viereckigen spitzen.*

The terms "square point" and "double bevel" are hard to reconcile. Two types of drill forms are possible, each of which would be a flat drill with a V point. One possibility to account for the *quarré* and *viereckigen* is that the drill had four 90-degree cutting edges; that is, it was sharpened at right angles to its flat side. Another possibility, substantiated by later independent evidence, is that the drill was sharpened like an arrow or spearhead. Whatever the shape of this drill, it was strictly a hand tool, as it was not held in the lathe in any way. Plumier has some practical comments on the difficulties of starting a hole in the center of the work and keeping it there.

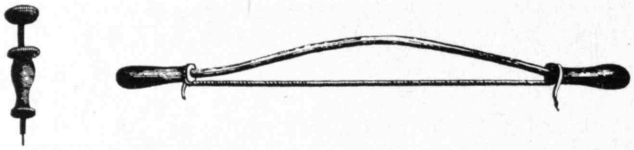


Fig. 3. A two-man bow and drill, probably the common drilling device of the Middle Ages

Other Seventeenth and Eighteenth century methods involved a bow drill (Fig. 2, page 31); the drilling tool would then need a pulley on it, and the upper end would turn in a drill pad, details which the artist of Fig. 2 omitted but which are shown in Fig. 3. The shape of the drill point is not clearly depicted, either here or elsewhere, but Nineteenth Century drawings of similar drills indicate that they were shaped like a cold chisel with a V point, the angle of the two cutting edges — or, rather, scraping edges — being varied according to the material drilled.

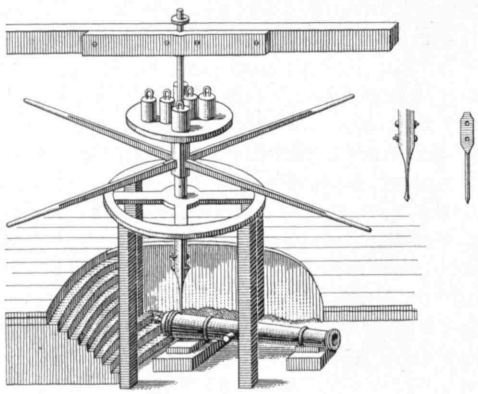


Fig. 4. A late Eighteenth Century device for drilling small holes

The foregoing type of drill is illustrated in Fig. 4. The artist who made the drawing of the drill point may have given little care to its exact form, but it appears to be so fashioned and sharpened that its cutting edge lies in an axial plane of the drill. This drilling device, or rig, is probably typical of many similar but smaller instruments used over a long period of years. Many other similar drills may be seen in Monge's *Description de l'Art de Fabriquer les Canons*, published in the "year two of the French Republic" — 1794. Gaspard Monge, Count of Pelusium, was the originator of descriptive geometry. His first book on this subject appeared in 1795. An ardent revolutionist, he was appointed minister of marine under the First Republic and, at the request of the Committee of Public Safety, wrote *L'Art de Fabriquer les Canons* for the purpose of giving full directions for casting and machining cannon.

In the French Encyclopedia of 1761, pump drills (Fig. 5) are called *drilles*. They were used — regardless of the illustration — for holes not much over a quarter of an inch in diameter. Bow-driven drills must have been limited to about half-inch holes in brass or iron, whereas larger holes were reamed from smaller ones or drilled with some such device as that shown in Fig. 6.

Fig. 6 is based on an illustration in Oliver Byrne's *Dictionary of Machines, Mechanics, Engine-work, and Engineering*, published in New York in 1850. Under the heading "Boring Tools," Byrne discusses all kinds of

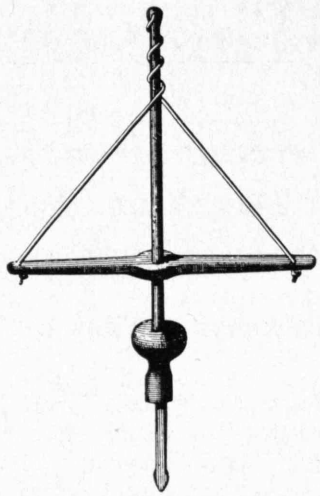


Fig. 5. A pump drill, from the French Encyclopedia of 1761

wood- and metal-piercing tools, but neither there nor elsewhere in the two volumes is found any reference to a light, powered drill for metals. This lack does not mean that all small holes were drilled by hand, for they were drilled in lathes, then known as drilling lathes. Byrne does not mention this fact, however. On hand drilling methods, he cites: "[The] upright or pump drill, a tool little used in this country (except in drilling the rivet-holes for mending china and glass, with diamond drill,) but . . . well known among the oriental nations as the breast drill." A drill that was driven with a bow had a square or a tapered shank onto which a small pulley was forced. The upper end of the drill had a 60-degree point which rotated against a drill pad that was held in the left hand for smaller holes and against the chest for larger ones. Byrne says: "As the drill gets larger the bow is proportionately increased in stiffness, and eventually becomes the half of a solid cone, about one inch in diameter at the larger end [or handle end], and 30 inches long . . . ; the catgut string is sometimes nearly an eighth of an inch in diameter, or is replaced by a leather thong. . . . Steel bows are occasionally used. . . ." A bow (*Concluded on page 40*)

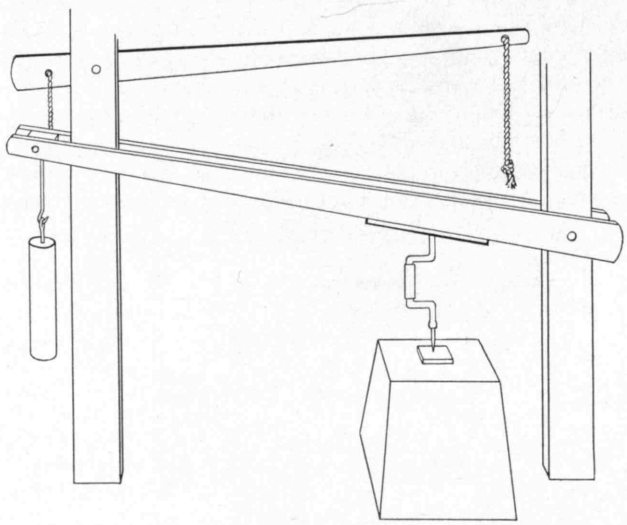


Fig. 6. Byrne's Dictionary of Machines, *issued at New York in 1850, describes a drilling rig like this for use by blacksmiths.*

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

M.I.T. and the Mobilization of Science

President Compton's Annual Report, Opening a Significant Year, Analyzes Implications of Co-operation in the Defense Effort

CO-OPERATION in the national defense program and the educational effects and implications of the program are thoughtfully analyzed in the annual report which President Compton presented to the Corporation on October 8. Coming at the beginning of a year that is undoubtedly one of the most significant in the Institute's history, Dr. Compton's report is an admirable survey of what is being accomplished by Technology in "the greatest scientific mobilization in the history of our country." From the experience of the past year, during which the Institute has contributed to national defense on a scale of which every Alumnus may well be proud, Dr. Compton turns to the prospects of the future and the opportunities for still greater advancement in the application of science and technology to social progress.

In his discussion of educational effects and implications of the defense program, Dr. Compton reports:

M.I.T. Photo

President Karl T. Compton

> While the diversion of energies to defense work has disrupted many normal activities and retarded important developments in both education and research, the defense program promises some important gains in terms of the peacetime objectives of educational institutions which are actively engaged in it. It is serving to bring educational staffs into closer contact with industry and operating agencies of the government. It is promoting cross-fertilization among many different fields and many fine minds from different backgrounds. Much of the research is actually an intensification of investigations already under way and is so fundamental that we would have welcomed at any time the opportunity to undertake it with the effectiveness that subventions from government and industry now make possible. While contributing directly to wartime needs, it is yielding new developments, new techniques, and new understanding which will have important peacetime applications and which presage a new prosperity for science and engineering after the war.
>
> The program has likewise provided a dramatic demonstration of the national usefulness of an educational institution which maintains a great staff and facilities for research and development in those forward-flowing streams of science which become the reservoirs of power when engineering art has harnessed them. This harnessing of science is accelerated in a time of national emergency. Nowhere else in our country, except in our great educational centers of research, is there a comparable reserve of scientific man power, of new technological ideas, of laboratory facilities. A few such outstanding institutions become, in time of emergency, centers of concentration on objectives of first magnitude. Other institutions, less powerful in research facilities, play their important roles as centers for other important work of less magnitude and as reservoirs of technical man power. In normal times, each and all contribute to the education of our people, the operation of our industrial economy, and the increase of scientific knowledge in this technological age.
>
> From the lessons of the present situation, I see emerging as a clear objective the outlines of an educational and research institution based upon the present ideals and objectives but incorporating a greatly magnified capacity for national service and commanding a wider recognition of the availability of its technological assets for use by government and industry.
>
> Let me describe this institution of tomorrow as a "super institute of technology" and suggest some of its features, as drawn from the lessons of past and present. It should possess an operating organization flexible enough to meet emergency conditions, alert enough to provide the *modus operandi* for meeting unusual needs in normal times, and farsighted enough to provide the means of dealing with new needs or opportunities in advance of their urgent demands. The institution must be organized quickly and effectively to assist industry and government in the solution of both normal and emergency problems and in obtaining highly qualified men. Through the

possession of advanced and specialized equipment and laboratories, it must have investigatory resources anticipating future needs and not available elsewhere. Of major importance, it must have a staff of outstanding experts marked not alone by individual brilliancies but by a homogeneous strength that insures co-operative, creative work, capable of developing a body of advanced thought and applying it to new problems. And, finally, it must have a student body of the highest possible caliber — graduate students of distinction and undergraduates of honors caliber and treated as honors students.

In idealized terms, this is the type of institution toward which we should aspire. Our trend has been in this direction; our resources, traditions, and prestige give us a good basis from which to proceed. The experiences of the present emergency serve to reinforce our faith in the social values and the practical feasibility of this educational ideal. What we need to have are considerably ampler financial resources and wisdom in using them.

Of our actual trend in this direction there have been many evidences, aside from the defense program, in the past few years. The increasingly careful selection of undergraduate students, the growth of our Graduate School without prejudice to the undergraduate program, the mounting volume of pure scientific research and of research and development projects brought to us by government and industry, the increasing number of graduate fellowships supported by industry, and the growing demand for technically trained men, especially those with graduate training, are indications of the trend. Certainly it is not idle speculation to observe that when the demands of the present emergency have been fulfilled, science and engineering will be faced with the task of creating new wealth to replace the colossal waste of war, and that this will require technological institutions of ampler resources and instrumentalities for public service than we have today, and that the Massachusetts Institute of Technology should serve in these directions with all the effectiveness and resource which we can muster. . . .

. . . *Ideals Restated* . . .

In the salient portions of that section of his report which discusses the Institute's notable role in the national defense program, Dr. Compton restates the founder's ideal of public service — a recognition of an obligation and opportunity to extend and implement Technology's regular program by service to industry, governmental agencies, and society generally.

Combined with this ideal and making it effective has been the Institute's concentration upon a defined and very specific objective of fundamental social importance: *through education and research, the development and application of science and technology as mainsprings of social progress.* As Thomas Huxley once observed, and as we in America acutely realize now in this grim national emergency, "Modern civilization rests upon physical science; take away her gifts to our own country and our position among the leading nations of the world is gone tomorrow; for it is physical science only that makes intelligence stronger than brute force."

If this truth was challenged in some quarters during the depression and before the war, there is a startling change today. *No need in the country is so urgent as that for more and better technically trained men,* no objective more important than increased productive power, and the pure scientist has been drafted as an indispensable factor in defense work. Let me add, parenthetically, that I believe that this change was coming even without the war, and that the present defense activity has only switched into temporary channels and accelerated a movement which was already under way. I believe that thoughtful people have reacted against the panicky confusion of the depression and that they see in technological progress, in new development, and in new production, essential elements of continuing national prosperity. . . .

Let me . . . describe the events and activities at the Institute which are associated with the defense program, dividing them into three groups: personnel contributions, education, and research.

. . . *Personnel* . . .

The first way in which the Institute responded to the national emergency was to release experts from its staff to serve in various operating or advisory agencies of the government. Nearly two hundred officers and members of our staff are now engaged in this type of service. Those in this group whose salaries continue to be paid by the Institute contributed during the past year approximately fifty thousand man-hours of time to defense, and the others have been temporarily transferred to governmental pay rolls, usually requiring new substitute staff appointments to carry the teaching loads which they have temporarily relinquished. . . .

. . . *Educational Activities* . . .

As the nation's gigantic defense program got under way, it quickly became evident that the supply of men with an engineering type of training was very inadequate. Consequently last October, Congress appropriated $9,000,000 to finance an engineering defense training program to be conducted in qualified colleges under the auspices of the United States Office of Education. The Institute has participated in this program by offering during the second term of last year and this past summer twenty-seven intensive tuition-free courses of college or postgraduate grade, with an enrollment of 929 students. . . .

Apart from this special defense training program under the Office of Education, we are engaged in a variety of other types of defense training. The Navy continues to send us a group of naval officers for graduate study, and of the sixty officers who were detailed here last year, forty studied naval construction and naval engineering and the remainder took special work in meteorology, electrical engineering, mechanical engineering, or aeronautical engineering.

Last summer a special intensive course in meteorology was given to recruits for the Army Air Corps, and during the past academic year another group of approximately sixty postgraduate students came for training for the Army Air Corps and the United States Weather Bureau. This course is now being repeated for a considerably enlarged group.

This work in meteorology provides a striking example of the mounting demand for men in highly specialized fields. For about ten years our meteorological course was a pioneer in this country in application and new development of scientific methods to meteorological art. There were enthusiasm in the staff, an important research program, but very few students and large per capita cost. The justification of the expense was frequently questioned. But now the investment justifies itself. In 1939–40 our full-time postgraduate enrollment in meteorology totaled thirty; in 1940–41, ninety-eight; and in 1941–42, one hundred and seventeen. During the interval, essentially similar courses have been established at California Institute of Technology, New York University, and University of Chicago, and the new methods have been adopted by the United States Weather Bureau.

Still another type of defense training is represented by a seminar for technical apprentices in industry which we are offering in connection with one of the research projects carried on here for the National Defense Research Committee. . . .

. . . *Defense Research* . . .

Some measure of the Institute's third and major defense activity, the prosecution of special research, is given by the number of contracts currently in force, the amounts involved, and the personnel required. Let me summarize this information in the following table:

Sponsor	*No. of Contracts*	*Amount*	*Scientific Personnel*	*Accessory Personnel*
United States Government (including Army, Navy, N.A.C.A., N.D.R.C.)	35	$3,594,375	262	126
Industries engaged in defense	20	194,120	58	20
Total	55	$3,788,495	320	146

. . . A program of such magnitude and representative staff is obviously more than an M.I.T. research program; it is a co-operative defense program in which many institutions and organizations are assisting importantly and generously, with the Institute providing its administrative, operating, housing, and laboratory facilities. A somewhat similar situation exists at a few other institutions, where a combination of suitable location, available facilities of the right sort, and a nucleus of personnel in a special field has led to the organization of large defense projects which are essentially co-operative rather than institutional. . . .

All told, we have allocated to this program existing space in the Institute's buildings, or provided new space, totaling 135,000 square feet, or over 10 per cent of the total space available at the Institute. . . .

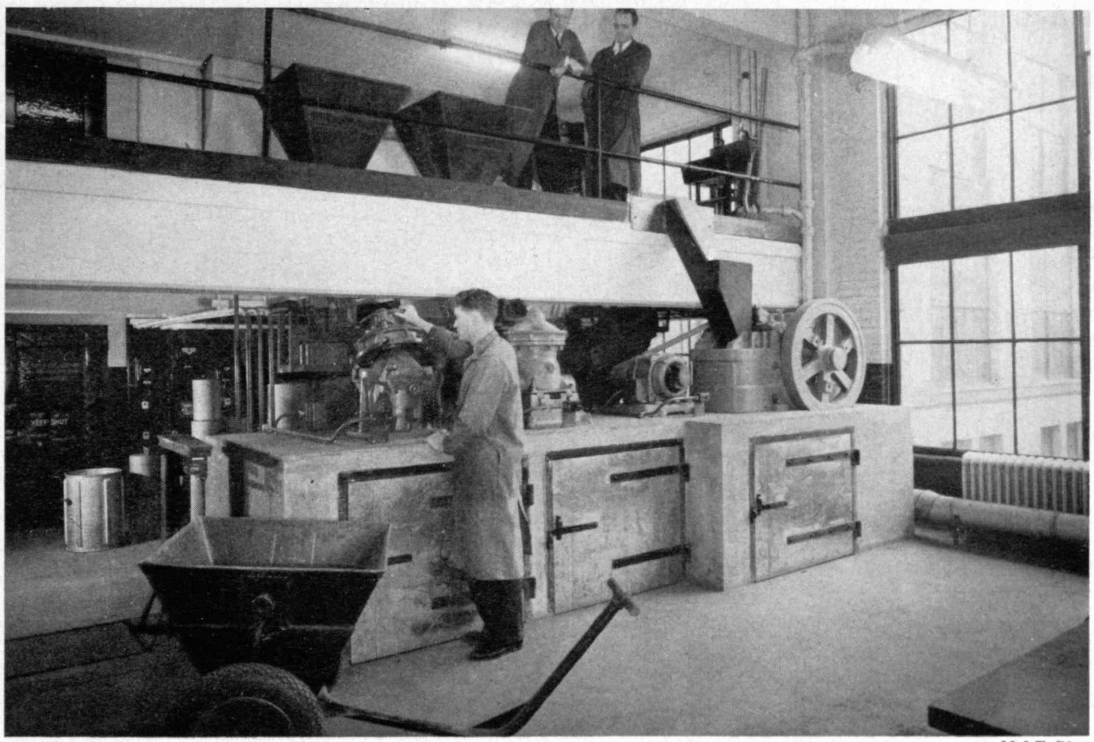
. . . *Financing the Research Program* . . .

In undertaking research for governmental agencies, the Institute contributes what it can without out-of-pocket expense beyond normal budget provisions. When costs exceed this, the arrangements for reimbursement have been governed by the principle that the Institute should in the long run neither gain nor lose financially. The contracts all provide for payment by the government of all direct costs such as labor, materials, and expendable equipment. All indirect costs are covered by a standard overhead allowance, equivalent to 50 per cent of the salary and wages involved. This overhead payment is expected to cover direct and indirect overhead costs, such as the proportionate salaries of administrative officers, plant maintenance and operation, library and infirmary service, insurance, advance of funds, and other services. An analysis of the Institute's ordinary operating budget in recent years indicates that the normal overhead cost of operating the Institute, when the above items are included, slightly exceeds one-half of the total budget devoted explicitly to salaries and wages in teaching and research. This fact provides the basis for the similar overhead charge on government work.

This policy on reimbursement was independently arrived at, but is the same as that adopted after investigation by the National Defense Research Committee for its standard contracts with educational institutions. A similar study of industrial research costs by this committee indicated that here the overhead allowance should be more nearly 100 per cent of the labor item in contracts with industrial laboratories, since industrial organizations have all the expenses of educational institutions plus interest on capital investments and taxes.

Some have argued that educational institutions should also include interest on capital investment in their overhead charges, and this argument has point when the research is undertaken for the direct and sole benefit of a business enterprise. In serving the government, however, particularly in defense work, it has not seemed to us proper to include a charge for interest on an investment which has been derived entirely from the gifts of public-spirited citizens and which was given by them to be used in the public service. . . .

Another impressive measure of the Institute's contribution to national defense is given by the following fact: A careful estimate of the aggregate salary value of the time contributed by all regular members of the Institute staff who are engaged full or part time in defense work but are wholly paid by the Institute comes to $250,000 for the past year and for known commitments this academic year. . . .



In the newly designed Richards Mineral Dressing Laboratories, large lumps of mine-run ore are crushed to the size of sea sand and finer, in three successive stages involving the three crushers shown from right to left. The ore is handled in 600-pound hoppers, one of which, mounted in an "ore buggy," graces the foreground. The collecting hoppers are enclosed in the foundation beneath the crushers. This enclosure and the maintenance of a positive downdraft of air through the crushers provide exceptionally clean and dust-free operation.

M.I.T. Photo

. . . *Budget Balanced* . . .

The Institute again completed its fiscal year with a balanced budget. This was accomplished through the astuteness of the Finance Committee in handling investments, through rigorous budgetary control, and through a small over-all reduction in departmental expenditures.

Of the Institute's total budgeted expenditure of $3,311,000, 68 per cent was academic expense (i.e., teaching and research); 27 per cent, plant and administration; and 5 per cent, miscellaneous expense. Forty-five per cent of operating income was derived from students, 34 per cent from investments, 10 per cent from loans and scholarships, and 11 per cent from other sources, compared with 45.5, 37, 10, and 7.5 per cent respectively for the preceding year.

The yield on all investments, based on market values as of June 30, was 4.36 per cent, compared with 4.32 per cent one year ago and 3.89 per cent two years ago. Investment income distributed to the pooled funds was at the rate of 4.10 per cent, compared with 4.38 per cent in 1940 and 4.02 per cent in 1939. The market value of the Institute's investments as of June 30 was 98 per cent of book value. In 1940 it was 95 per cent, and in 1939, 100 per cent. The June 30 investment portfolio showed 37.5 per cent in bonds, 4.6 per cent in preferred stocks, 43.5 per cent in common stocks, and 14.4 per cent in mortgages, real estate, and cash. Comparable percentages for the preceding year were 43.7, 4.1, 44, and 8.2 respectively. . . .

. . . *Placement* . . .

The number of positions available to our graduates last June was the greatest on record. Graduates who were placed averaged better than two offers per man; had we had enough graduates available in fields such as mechanical, aeronautical, and chemical engineering and in business and engineering administration, chemistry, meteorology, and naval architecture, we could have placed an almost unlimited number. Just now, demand for men with postgraduate training in physics and communications engineering is rapidly growing. The crucial need for scientists and engineers in the defense emergency and their contributions to public welfare have brought a wider recognition of the value of technological education which will persist, I believe, long after the emergency is over. . . .

. . . *Some Important Gains* . . .

Along with maintaining our normal educational activities, we have been able to initiate or put into effect some highly significant additions and improvements in our facilities and educational programs. . . . Last January, the Corporation authorized a new degree, doctor of philosophy in industrial economics, based upon a new program of graduate study and research in the social sciences. Subsequently friends of the Institute have contributed $8,000 for fellowships in this field, and last month the Rockefeller Foundation authorized a grant of $30,000, payable over three years, for a research study of the economic effects of technological change. This research, which requires a combined technological and economic approach, will seek to clarify the role of invention in the business cycle and will involve investigation of factors in an individual firm influencing technological change together with case studies of the effect of inventions on labor policies.

These developments reflect the steady growth of our work in social studies, particularly in relation to the economic and labor problems of industry. Our very active Industrial Relations Section, established three years ago, which has been generously supported by industry, will play an important part in this new program of professional training and research.

Our biological engineering program, which went into full gear this past summer under the direction of its new head, Dr. Francis Schmitt, has received an additional grant of $70,000 from the Rockefeller Foundation for the establishment of a Sub-Microscope Center for studying the application and improvement of the electron microscope, particularly in the biological field.

Recent years have brought increased emphasis at the Institute on industrial or applied mathematics and the more extensive application of mathematical techniques to special problems. One example of this is our Center of Analysis, which provides a wide range of machines for the analysis of technical problems. . . .

. . . *Objectives under Study* . . .

Two of our Visiting Committees are at present giving intensive study to two impending needs of the Institute: better library facilities and more adequate dormitory accommodations for our undergraduates. The Visiting Committee on the Library in collaboration with the Friends of the Library is developing plans for a library building which will aid the Institute to create and operate the most serviceable scientific and technical library in America. Our present Central Library, located under the central dome, is difficult of access, has disgracefully inadequate offices for the staff, and fails in its facilities to permit effective use of the books which it houses. . . .

Still another problem, and one of fundamental importance, is that of staff salaries and of a tenure and promotion policy adjusted to a stabilized income as an optimum condition. The Institute, along with other endowed institutions, is faced with new conditions which require the most careful long-term control of staff distribution to prevent unbalance and to insure the maintenance of salary levels adequate to attract and hold first-class teachers. With the co-operation of a faculty committee, the administrative officers are intensively studying this problem, and during the current academic year I hope to present to the Corporation specific recommendations.

Tenure and promotion policies, however carefully devised, cannot cure a basic condition of inadequate funds for salaries. It has been recognized for the past twenty years that our salary scale is inadequate, based on any reasonable standard of comparison. We must either soon obtain additional funds to maintain a Faculty of the desired ability and distinction, or severely prune our activities to concentrate support on those selected to remain. In my judgment, the most important and obvious problem now facing the Institute as we look ahead is this need for a more adequate scale of staff salaries.

Student Health

TO its already notable program for the maintenance of student health, the Institute's Medical Department this autumn has added psychiatric and dental clinics, both of which are now recognized as important services in educational institutions. The psychiatric clinic was established after a careful study of the problems and needs of college students. It has been demonstrated that many students can be helped by the advice of trained psychiatrists, and most of the large colleges and universities are establishing clinics to meet this need.

In discussing the objectives of the psychiatric service, Dr. George W. Morse, the Institute's Medical Director, said that the primary purpose is to offer opportunities for students to discuss such matters as discouragement, irritability, loss of the power of concentration, and

maintenance of general mental efficiency. These problems sometimes arise from the adjustments necessary in entering upon a new routine of life.

The psychiatrist appointed to the new position in the Medical Department is Dr. John Milne Murray, a graduate of Dartmouth College and the school of medicine of the University of Pennsylvania. Dr. Murray formerly was head of the psychiatric clinics at Dartmouth College and St. Paul's School at Concord, N. H., for a period of six years. He is now a practicing psychiatrist in Boston and holds the position of lecturer in psychiatry at the schools for social work at Smith College and Boston University.

The purpose of the new dental service, said Dr. Morse, is to prevent the development of physical impairments which arise from faulty dental conditions. The importance of such a service is indicated by studies of student groups in a number of leading universities, which show that dental examination of 900 new students would disclose ninety men who had never had any dental care; from 2,500 to 5,000 tooth cavities; 800 to 1,200 impacted or unerupted teeth; 150 to 200 dead teeth; 75 cases of pyorrhea; and five cysts.

Consulting chief of the new dental clinic, which was made possible by a grant from the Charles Hayden Foundation, is Dr. John J. Gibbons of Boston. He has as his assistants Dr. Robert M. Bailey and a dental hygienist. The service of the dental clinic includes a compulsory dental examination for every freshman. In addition, all students have at their disposal advice, diagnosis, and facilities for emergency treatment. Prophylactic cleaning of the teeth is available at a nominal fee. It is not intended that dental surgery, extractions, fillings, or orthodontia be undertaken by the clinic. Cases of this nature are referred to the student's family dentist or a competent local dentist.

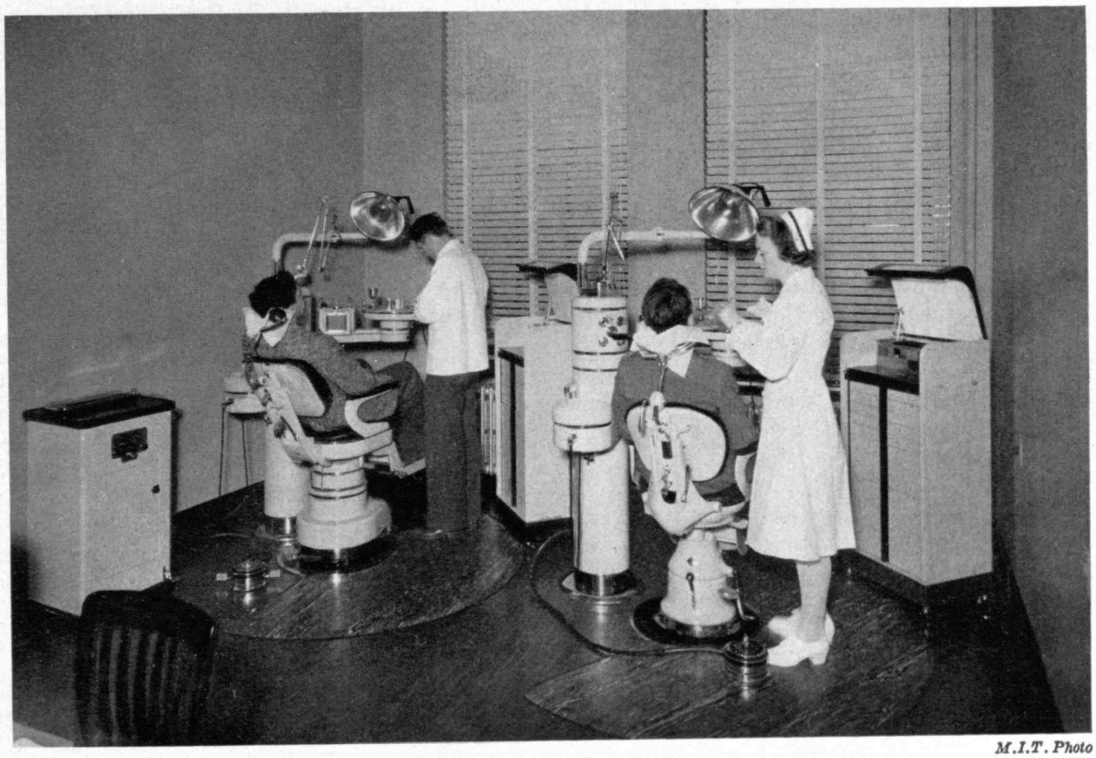
To the Class of 1945

THE importance of technological education and the need for co-operation to assure maximum effectiveness of the Institute's activities in the national emergency were emphasized by President Compton in an address of welcome to the Class of 1945 at the All-Tech Smoker.

"There is universal agreement among true Americans," said Dr. Compton, "that a nazi victory in this war, with the imposition of the nazi ideology on most of the rest of the world and the ruthless exploitation of conquered nations by the Nazis for their own advantage, would damage our own standards of living and, far more important, would imperil our precious heritage of freedom of thought, belief, speech, and action. A nazi victory would undo generations of liberal progress and could quench the enthusiasm, the ambition, and the essential humanity that characterize America, as a rainstorm quenches a campfire, leaving the embers of that campfire too wet and sodden to be rekindled for a long time to come.

"Hence, in my judgment, no other issue or activity now compares in importance with the defeat of Hitler and the antidemocratic, antihumanitarian aspects of his nazi movement. If this statement is true as a matter of national policy, it is also true as regards this educational institution and as regards you and me and our colleagues here individually. Let me therefore point out a few corollaries to this statement.

"The war will largely be won by technological superiority in design and in production. The postwar rehabilitation will also involve the work of technologists as an essential activity. Therefore this emergency has increased the importance of your working to secure the best possible education and training in your various



The dental clinic in the Homberg Memorial Infirmary. Opened this fall and completely equipped, it adds greatly to the Institute's facilities for building the man as well as the mind.

M.I.T. Photo

professional fields. Similarly, the administration and staff of the institution have an increased incentive and responsibility to help you secure the best possible scientific and technological education.

"The facilities of our laboratories and the special knowledge and experience of members of our staff invite continual demands on them by national defense agencies. When the national importance of these demands is high, we have no alternative or desire but to respond as quickly and effectively as possible. That we are doing so is proved by many facts: Approximately two hundred officers and members of our staff are devoting all or much of their time directly to national defense work, and all remaining members are doing their part by sharing increased burdens; 10 per cent of our floor space is devoted to defense work, and three new buildings for this purpose have been built or are nearly completed; our expenditures just for national defense work this year will exceed our normal total educational and research budget.

"To give you the best possible educational experience and at the same time to use the facilities of laboratories and staff for national defense activities obviously puts a great strain on all our staff and all our facilities. Sometimes sacrifices of minor importance will have to be made in favor of more significant interests. Last year, as we were entering this emergency, the student body displayed a very creditable spirit of co-operation, and I would ask you of the entering class to do likewise, for it is in a good cause."

Visiting Committee Reports

REPORTS of the Corporation Visiting Committees for the departments of Mathematics and of Building Engineering and Construction are summarized below:

DEPARTMENT OF MATHEMATICS *

THE Committee on the Department of Mathematics met with Henry B. Phillips, Head of the Department, and staff members on December 19, when Professor Phillips outlined the program of the Department. To part of the discussion he invited most of his staff, thus providing an opportunity for the Committee to meet them and to discuss various phases of the work. The Committee feel that the affairs of the Department are in capable hands and that the reactions of the Department influence suggestions by the Committee.

A considerable part of the discussion centered on the freshman courses in mathematics and physics, since the general undergraduate program in mathematics was undergoing careful examination and revision, and those two courses are closely related and are unquestionably fundamental in the curriculum of the Institute.

The suggestion was made that any revision of the freshman course in mathematics should be made in close co-operation with the physicists. The first part of such a course should emphasize the three fundamental notions of the calculus — the derivative with its interpretations as a rate of change or slope of a tangent, the antiderivative, and the definite integral as the limit of a sum. As far as possible the introduction should be in terms of the elementary concepts of analysis. In such terms, line integrals along curved paths, directional derivatives and gradients in a space field, or the notion of analytic functions — all of which are of immense and early importance in physics and mechanics — are almost automatically absorbed and serve to illuminate the too simple ideas associated with functions of a single real variable. Of course, their meanings should also be made clear by applications to very elementary functions, and especially to the particular ones actually encountered in the freshman physics course.

Early in the freshman year the simple special differential equations encountered in the physics course should be set up and integrated, and in one or the other of the courses the differential equations of motion of a particle or a system of particles should be more explicitly formulated with the initial conditions which characterize the motion of such a system.

The techniques of indefinite integration and complicated differentiations should be postponed to the last. Though often early insisted on by teachers of the calculus, such techniques are useless unless the student understands the kinds of things that can be done with calculus notions and notations.

The Committee were interested in the special undergraduate courses designed to fit the needs of students in certain Departments, and in particular in the studies which, combined, form Course XVIII. The Committee hope that these studies will grow in popularity and influence among the students as time goes on. Relatively few men in business, and not enough even in engineering, have mathematical training sufficiently advanced to enable them to see where applications of mathematics can be made effectively, and fewer still could carry such applications through. The new courses will be influential in helping to correct this deficiency.

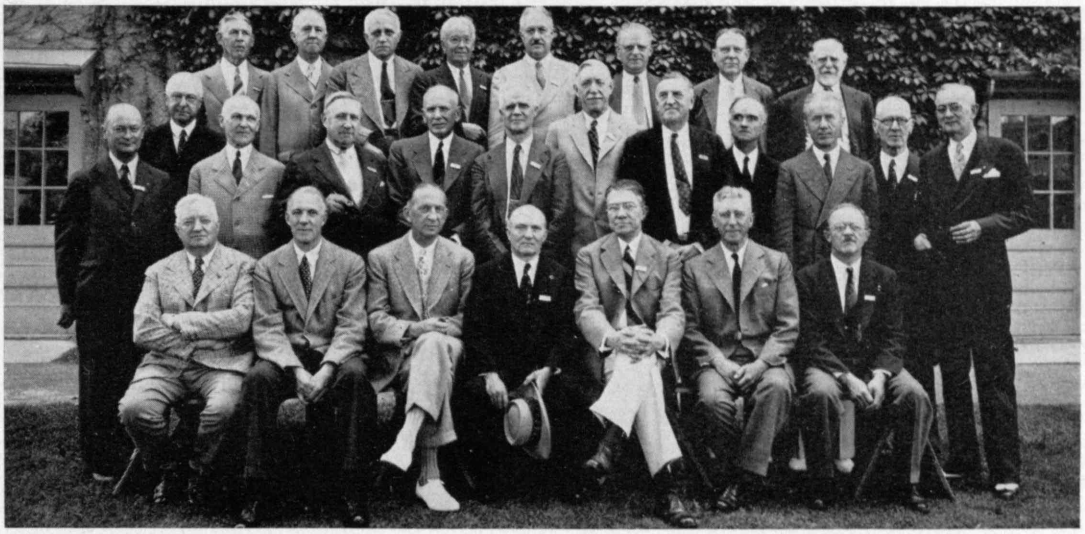
The Committee were pleased to find the Department taking especial interest in mathematical models, and in particular in the valuable collection left by R. P. Baker, former associate professor of mathematics at the University of Iowa. The Institute would be a natural place for an unusually good collection, of which there are very few in this country.

DEPARTMENT OF BUILDING ENGINEERING AND CONSTRUCTION †

THE Committee met in the laboratory of the Department on December 16 with the faculty. Members of the staff summarized the individual courses in building construction, materials, and structural analysis, as well as the teaching methods employed, showing how the arrangement, sequence, and content of instruction were designed to fulfill the basic principles upon which the Course is founded. Discussions of these matters

* Members of this Committee for 1940–1941 were Albert F. Sulzer, '01, Chairman, Harry P. Charlesworth, '05, Alfred H. Schoellkopf, '15, Hovey T. Freeman, '16, Roy W. Chamberlain, '31, Gilbert A. Bliss, and Thornton C. Fry.

† Members of this Committee for 1940–1941 were Harry J. Carlson, '92, Chairman, Charles T. Main, '76, Lewis E. Moore, '02, George W. McCreery, '19, Joseph K. Gannett, Irving B. Parkhurst, and Joseph W. Powell.



M.I.T. 1901 at its fortieth reunion, held in June at Swampscott

centered chiefly around field experience for the students and lectures on the general phases of the industry.

The Department's policy of giving students numerous opportunities to observe actual construction, and the plan for summer employment between the third and fourth years, should be continued. If possible, summer employment should be extended to another period. This plan presents difficulties at present, as students do not necessarily select their Courses during their first year, and the summer following their second year is now occupied with required studies. Any provision for strengthening this phase of the students' experience should be planned as soon as a method is evolved. In addition, students should be given the opportunity to build or have built projects of their own design in order to give them greater confidence in their own ability and to increase the amount of practical work which they do on their own initiative. This last suggestion was included in the building-construction courses in the spring term of 1940–1941.

Inasmuch as builders and building engineers are frequently confronted with problems in related fields, a course encompassing the more general phases of public works such as highways, sanitary structures, and the like would be highly advantageous. Such a provision could be made within the present curriculum by including it in the course in construction problems.

Although enrollment in the Department, as in all Institute Courses, is limited, room is available for a few students of the proper caliber who are definitely interested in building. Attention should be given the problem of making the Department's facilities, unique in the field of engineering education, available to more young men who could become leaders in the industry, and of making those facilities available regardless of the student's financial background.

The discussion of the proposed activities of the Department in its effort to be of greater service to the industry revealed that work on a study of building codes had started under the Committee for the Coordination of the Building Industry appointed by Dr. Compton. This survey is being augmented by a study of both building and zoning codes under the direction of the School of Architecture and with the help of this Department. The efforts now directed toward standardization of construction details and materials should be encouraged and stimulated. Because of the neutral and impartial position which the Department could maintain, it could be of service to the architect, the builder, the manufacturer, and the public in making performance surveys of building details and materials in actual practice. With the co-operation of the other Departments, the Institute might become the clearing-house of information of this kind.

M.I.T. 1916 met for its quarter-century reunion at Osterville in June.

Acme Photo Service

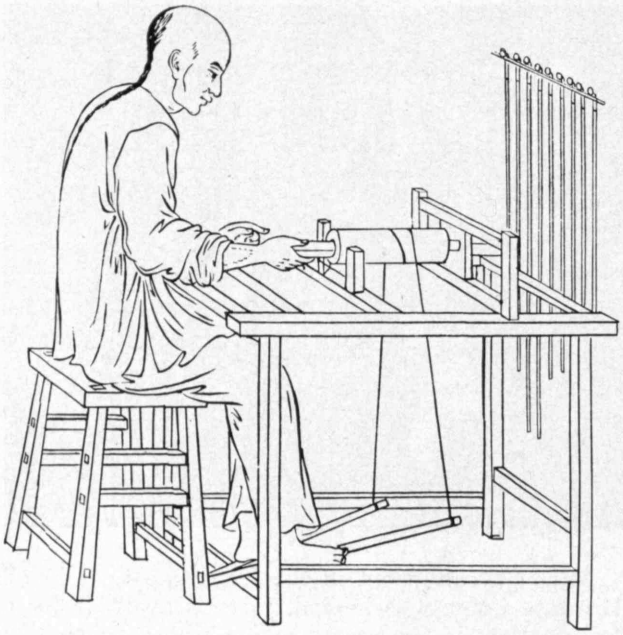


Fig. 7. Chinese pipestem-drilling machine, from an Eighteenth Century print

OLD-TIME DRILLS

(*Concluded from page 32*)

owned by the writer's great-grandfather, who was a blacksmith, was made of flat, tapered steel. The outer end was bent at right angles, with a hole for the thong, and a similar piece with another hole was welded on near the handle for the other end.

No sharp distinction can be drawn among tools, devices, and machines. Figure 8 is the drilling device of a *serrurier*. It was attached to the bench by a C clamp or a hand screw and driven with either a bow or a "great wheel." This device does not, however, have any element, such as a screw or other leverage, to force the drill into the work, and hence can hardly be called a drilling machine. Another drilling device — Fig. 7 — might have to be called a machine, as it is a type of Chinese lathe used by other craftsmen besides pipe makers, but as a drilling machine it is open to the same objections as that of Fig. 8, although the drive is

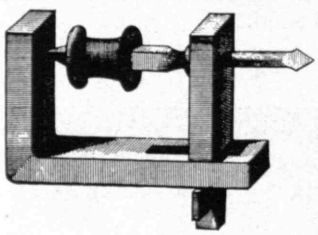


Fig. 8. Rotated either by a bow or from a "great wheel," a locksmith's drill pictured in the French Encyclopedia of 1761

much more effective. It is not quite clear what the workman is doing with the square piece of wood which he holds in his hand, unless the hollow spindle of the lathe is being used as a hollow mill such as dowel makers employ. Presumably the long pipestems which may be seen hanging on the wall are made of reed or bamboo, which would need to be drilled from end to end. The work could be put into a hollow spindle of the right size and the drill held in the hand, or the process could be reversed. This type of drive is distinctively Chinese. A similar lathe is used for cutting the short threads on wooden or ivory chessmen where they screw into the base. The rear end of the spindle is threaded, the work is forced into a hole in the other end, and the treadle motion carries the work back and forth across a cutting tool. This method would not be so good for longer screws but is very effective for short ones.

WOODEN SHIPS AND MAINE BUILDERS

(*Continued from page 26*)

deck plugs. The planks are Douglas fir without knots, the cleanest of clean lumber, but it has to come from the West Coast. Native white pine goes into the decks, and white pine is really even better than fir for planking — if only there were enough of it.

There is still ship oak in Maine — not much white oak but a lot of gray — for keels and cutwaters and stern blocks. Once shipbuilders considered that beech or birch made as good a keel as oak and was as good an underwater wood, but present plans call for oak. Oak or beech, it is well to lay a keel in a boat shed to shield it from the sun. Ships are like sunflowers and turn toward the sun. A keel, thick and solid though it seems, will curl perhaps half an inch toward the sun on a hot day unless securely wedged; and frames, too, have a tendency to uncurl a little if out to the weather.

In winter, sheds keep off ice and snow and make a shield against cutting winds. A man can plane in a wind, but he can't make so much headway. Speaking of planes and planers — outboard joiners, they are called, when they plane the outside of the ship — Bill Hiscock said that in the old days the outboard joiner would measure a ship and contract to plane the hull for a lump sum.

Planing is bone labor. In the old days when ships were trunneled — when the planks were pegged onto the frames with wooden treenails instead of spikes — the ship's side was spotted all over with cross-grain locust trunnelheads, and when a man's plane fetched up against one of those, he was lucky if he didn't jump the blade right out of his plane.

Harry Marr, who has a yard at Damariscotta, Maine, said to me, "You might think planing is easy. Well, it's easy to watch, but you won't want to keep at it long without a tall drink of lemonade, I can tell you. If we can't lay our hands on regular outboard joiners, we put off that job of planing the ship till the last minute, because we don't want to lame a whole gang up and unfit them for other business.

"You'll be planing in a hot corner of a boat shed, and you'll get into about any attitude the law allows. First you'll be planing down slashways a bit, and then squatting under a bilge and planing overhead, and maybe then twisting sideways and planing with the left hand; and by night, if you are new to it, you'll think somebody has hamstrung you or hung a millstone round your neck. You'll be entitled to be wheeled home in a wheelbarrow with your heels dragging.

"I tell you, I've lamed up a whole gang planing a ship. You've got to be muscled (*Concluded on page 42*)

WOODEN SHIPS AND MAINE BUILDERS

(*Concluded from page 40*)

up to it, when you take that job. The outboard joiners used to have the biggest chests and backs and arms of any men building ships."

"Are any of those joiners left?" I asked.

"A few. Some of them have gone a little by, but they can still get a young man with his tongue hanging out because they work to better advantage than he does. They've got the motion right down in their bones — just like those calkers."

The calkers were swinging away with long-nosed mallets, driving in one thread of cotton and two of oakum. Clucking of adzes and knocking of the calkers' mallets are the most characteristic of shipyard sounds.

"Those calkers have a wrist motion that comes hard at first," Harry Marr said. "You try it for a while and you'll think your hand is tied onto your arm with a piece of string, till you get the hang of it. But then it goes easy enough."

The spar makers, too, have their special tricks. A spar has got to look tapering all the way, but if it really is tapering it will look pinched in the middle. So good spars must be made "barreling," the spar builders say; and that means with a little strength added in the middle.

"I go into the woods and pick me out a tree," said the spar maker. "I climb right up with a tape measure and make sure the tree is big enough at the top to hold the size. I measure the length up and then the diameter at top and bottom. I don't want to throw away a week's work on something that'll come out too small after all.

"And I don't want the tree quite straight either, except one way. Say I'm making a main boom. I want a little sweep to it, because hanging down in the slings the boom bags down, and it needs a little curve the other way to fight against that.

"Same way, you want a little curve in your mast to begin with. The rigging force draws forward, and if your mast curls aft just a hair, the rigging will draw everything straight. The rigger will know how to pull the mast forward."

"You don't want seasoned stuff for masts?"

"No. We use green timber. Pine or spruce. Some captains like spruce; they think it's tougher. I remember I made four spars once for a captain. He came one morning and sat down on one of them and tapped it.

"'What kind of spruce is this?' he asked.

"I said, 'Spruce is spruce, my friend.'

"As a matter of fact it was pine. You have to take a good spar where you can find it, and you don't want to walk into the next county for spruce if pine is handy. I had been tanning up this pine stick to get it to look like spruce. Rolled it a little now and then so as to tan it good all round.

"The captain kept on sitting on that pine stick, and the pitch was boiling out of it. He fairly stuck to it, and he stuck to his point, too. He took up a chip of wood and pulled it apart. It was stringy and sticky like any pine.

"'That's going to be a tough spruce stick, all right,' the captain told me. And I said, 'It's a tough stick, there's no denying that.'

"So the captain sailed away with it, and he lived and died with spruce. But as a matter of fact it was pine. And I contend that pine is just as good as spruce for a mast, if your rigging's sound. And as far forth as that goes, if the ship jibes and fetches up with a bang, either pine or spruce will let go, and don't you let anyone tell you different."

MANTLES FOR MARS

(*Continued from page 23*)

by the layman. When an "all-metal" bomber or pursuit plane roars overhead, one hardly realizes the wide variety of textiles necessary, directly and indirectly, to keep that plane in the air. Contributing to safe flights are cotton, silk, linen, and synthetic cordages, parachute silk, cotton and synthetic webbing, gasproof balloon cloth, tarpaulins, and mechanics' coveralls. Several reasonably satisfactory substitutes for the silk and the linen — which are virtually the only strategic materials in the textile field that might be cut off in time of war — have been made available over a period of years. These substitutes include Tenasco, Fortisan, Nylon, and new heat-resistant cotton cord. It is approximately true that the only real shortage problem not completely solved to date is that of the jute packing used to prevent joints from leaking liquids. A cotton treated with graphite and oil now in use is not yet entirely satisfactory.

The aviation industry uses probably more high-grade cotton than it does any other single fiber. During the present fiscal year, between two million and five million yards of cotton airplane-cloth will be required, together with a considerable amount of supplementary cotton webbing and tape used in connection with the cloth for reinforcement over the ribs in the wings. Mercerized cotton airplane-cloth is used for covering the control surfaces and in building trainer planes and tow targets. Balloon cloth, treated with rubber or other gasproofing compounds, is utilized in large quantities, particularly for barrage balloons. Engine covers made of cotton fabric are used by the Army Air Corps to reduce the time required to warm up a cold engine for take-off. Much of the cotton in tires is being replaced by high-tenacity rayon which releases the higher-quality cotton for other and more critical uses for which no suitable substitutes are yet available.

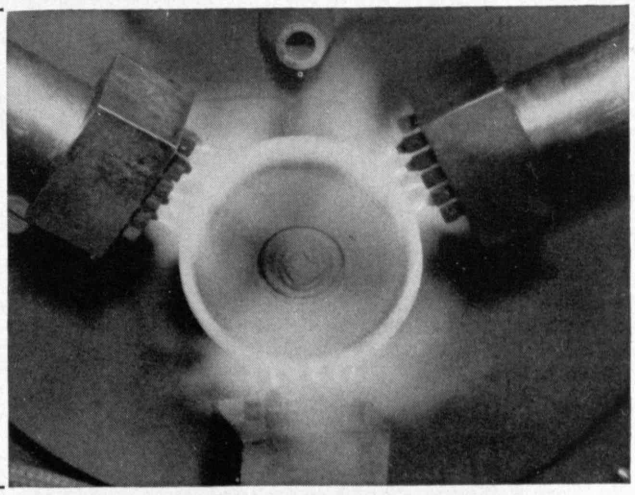
Silk in reasonable quantities is still available in this country and is still being employed in parachutes, but the new specifications call for the substitution of high-strength synthetics in the future. A greater part of the cordage for parachute shroud-lines is made of high-grade silk at the present time, but recent specifications have been altered to substitute Nylon. Silk sewing thread has been replaced with Nylon, which is also entirely taking the place of the linen formerly used for parachute harnesses, reinforcing tapes, bomb slings, and the like. In some of these applications, cotton may be used to fill out the Nylon webbing to give extra body so that the webbing will fit existing hardware.

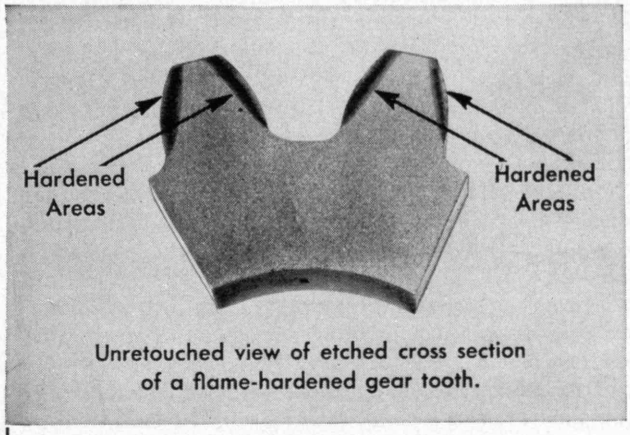
(*Continued on page 44*)

OXY-ACETYLENE FLAME-HARDENING makes wearing parts last longer . . .

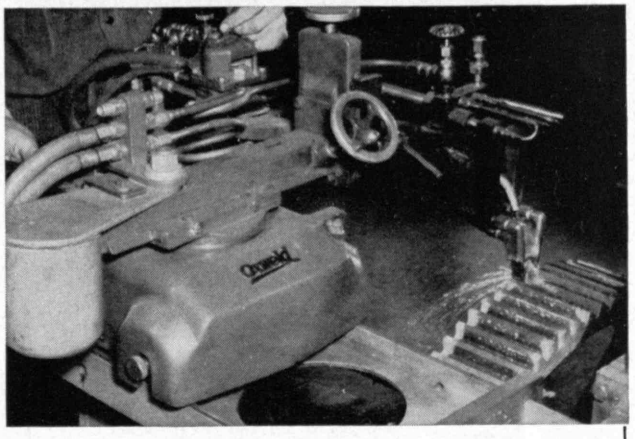
1. What it is and how it's done

Oxy-acetylene flame-hardening imparts a hard case to wearing parts to make them last longer. This is done by heating the area to be hardened with oxy-acetylene flames, and then quenching with water or oil. Commonly used steels and high-tensile cast iron can be flame-hardened successfully. Small areas can be hardened by the "spot" method, using a hand welding blowpipe. Larger areas are usually hardened by mechanized equipment, using the "progressive" method or—as shown in the illustration at the right—the "spinning" method.





Unretouched view of etched cross section of a flame-hardened gear tooth.



2. What its advantages are

In many cases, oxy-acetylene flame-hardening is not only the best method, but the *only* practical method. Some of its advantages are:

- Parts of any size or shape can be hardened.
- There is no appreciable distortion.
- Toughness of the core is unaffected.
- Chemical composition of the metal is unchanged.
- Penetration can be closely controlled.
- The hardened area does not spall off.
- It permits use of cheaper base metals.
- Only a moderate equipment investment is required.

3. Typical parts being hardened

In the illustration above, Oxweld flame-hardening equipment is being used to impart a hard case to the teeth of a crane gear — at only the points where wear occurs. A few of the many other parts which are hardened—or fabricated—with the help of this oxy-acetylene process are:

Sprockets	Cams	Piston Rods
Dies	Crane Wheels	Pump Plungers
Sheave Wheels	Bearing Raceways	Crossheads
Shear Blades	Shafts	Saw Blades

Linde can supply the gases, the apparatus, and help in using flame-hardening. If you are interested in giving longer life to wearing parts, *talk it over with Linde!*

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OXWELD, PUROX, PREST-O-WELD APPARATUS . . . OXWELD SUPPLIES

MANTLES FOR MARS

(*Continued from page 42*)

The wool fiber used for aviation material goes largely into uniforms and pressed-felt buffers. A warp-knit material has been developed as a substitute for the camel's hair used in intermediate clothes for fliers.

Use of textiles for defense is not limited to the armed forces. Civilian utilization is also important. One of the most pressing needs is the tremendously increased quantity of cotton fire-hose which is required for successfully combating fires resulting from incendiary bombs. Because bombings of the incendiary type are also frequently accompanied by some demolition bombing, the problem of insuring the continuous action of hose streams becomes doubly difficult. The unusually severe usage to which the hose is exposed in times of emergency makes essential a much larger reserve quantity than is now the case. Inasmuch as most fire departments are really not fully equipped for their ordinary service requirements, a serious situation exists from the civilian defense standpoint in this matter.

Gas masks, which must be provided in tremendous quantities for the civilian population, still depend for their action in no small degree upon textile fabrics, both for the mask itself and for the webbing or other means of fastening it to the person. Requirements for sandbags make necessary the use of inexpensive fabric in large quantities. England is already suffering from an acute shortage of material for the manufacture of sandbags, and we are in an even worse position.

Blackouts require screening materials for prevention of light leakage from buildings. A convenient means for assuring adequate blackout conditions is found in the coated or double fabrics of various types of construction. But a psychological problem is involved here, inasmuch as the coated fabrics which have hitherto been available for such use have been most uninteresting in appearance and, in fact, definitely depressing in color and texture. Blackout conditions are a sufficient strain upon the nerves of a population without the addition of any further psychological hazards, and hence a tremendous amount of attention has been devoted, in England particularly, to the development of fabrics which would be efficient in preventing light leakage but which, from the inside of a dwelling, would present a reasonably attractive and cheerful appearance.

The use of translucent, weatherproof fabrics to take the place of shattered glass has also brought about increased utilization of textile materials and has proved a reasonably satisfactory temporary substitute. Moreover, thousands of yards of adhesive tape have been employed for the reinforcement of plate-glass windows in stores and industrial establishments to avoid the dangerous effects of demolition bombing on such units. Considerable ingenuity has been shown in the application of these strips of tape, with fairly decorative results in certain instances. Application of such a fabric to a plate-glass show window involves a number of difficulties, principal among which is the necessity for leaving a certain amount of open space so that the contents of the window may not be totally obscured. The observation spaces, however, must (*Concluded on page 46*)

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MOBILITY has made the U. S. Marines a famous force of fighting men. They're always ready to go anywhere — and ready to tackle any job after they arrive. . . . "The Marines have landed and have the situation well in hand."

What about your own situation — you and your family? Are you ready to meet *any* emergency — wherever and whenever it comes? Can you plunge into the uncertain years ahead as confidently as a Marine splashing shoreward through the surf?

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The New England Mutual men from *your* college are listed below. Call on them for constructive counsel — for counter-measures to the dangers which threaten your family's security.

If none of these fellow-alumni is near you, look up the New England Mutual office in your city. You'll find it staffed with *your* kind of people — people you'll like and can *trust.*

Raymond P. Miller, '18
Salem

Arthur C. Kenison, '19
Boston

Blaylock Atherton, '24
Nashua

David M. Nason, '33
Boston

We have a number of opportunities available in various cities, where capable field men have left for military service.

If you are married, between 25 and 35, and not particularly happy in a routine job, why not consider a career where you can be your own boss? Or perhaps you have a friend who might be interested.

In either case, just write to Wm. Eugene Hays (Stanford '26), 87 Milk St., Boston, Mass., for further information. There's no obligation, of course.

MANTLES FOR MARS

(*Concluded from page 44*)

not be so great in area or so located as to form a hazard to the passerby in the event of breakage of the glass, and the openings themselves should be arranged with respect to the reinforcement in such a way that a reasonably attractive pattern is presented to the observer seeing the window from a distance.

The work of decontamination in event of gas attack also requires very specialized textile materials for clothing and tarpaulins. Much attention has been devoted to this problem jointly by the textile manufacturer and the chemist. Clothing of all sorts for decontamination work and for protection of persons whose exposure to gas conditions is likely to be severe is being devised with reasonable satisfaction. The use of asbestos for protective clothing is also increasing.

After all, there is nothing new under the sun. At the dawn of civilization the twisted strand as bowstring assured man's defense against a hostile environment in which his unaided hand was no match for fang and claw. Today in a multiplicity of forms textile fibers continue to serve as an integral portion of a mechanized world wherever lightness, flexibility, and strength, each in its highest degree, go hand in hand for national defense.

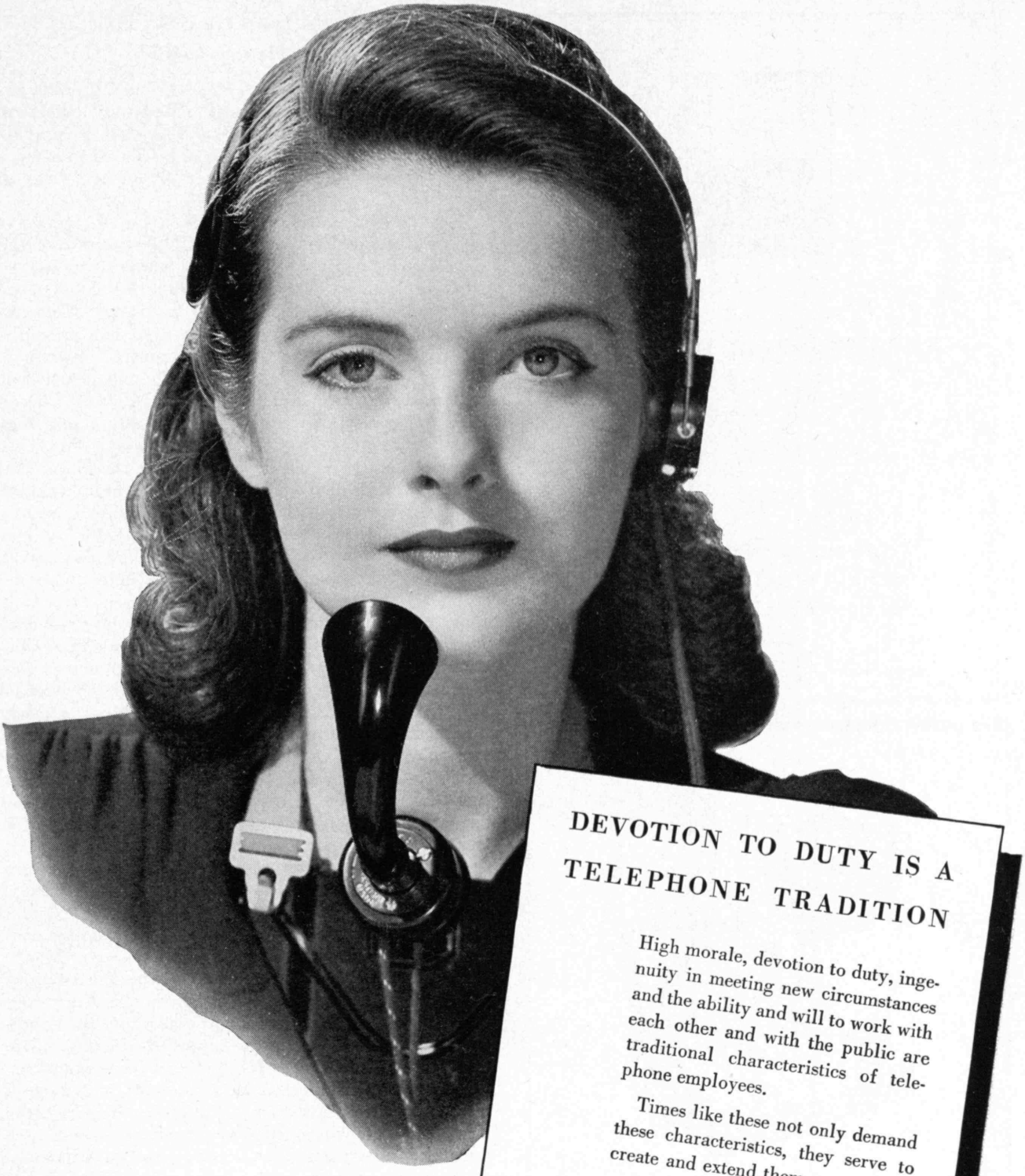
WINGS FOR A NATION

(*Continued from page 30*)

Once a start was made, the growth of the air-mail service was rapid. The first months were remarkably successful from an operational standpoint, and plans were soon being laid for the establishment of a transcontinental route. This dream became a reality when, on September 8, 1920, service was inaugurated between New York and San Francisco.

The Army's de Havilland (DH-4) aircraft with Liberty engines became the standard equipment for the air-mail service. But these aircraft had to undergo considerable revision: The bodies were rebuilt for increased strength and to provide mail stowage; the landing gears were replaced by new ones with larger wheels and greatly increased strength; and the whole structure was thoroughly overhauled and changed in a multitude of details in the Air Mail Service's own shops near Chicago. Improvements were made on the Liberty engine, too, which made it much more dependable. When, early in 1926, increased mail loads made it apparent that the de Havilland plane would no longer be adequate, competition among various aircraft manufacturers was invited. As a final result, fifty-one Douglas mail planes were purchased which were capable of carrying more than twice the loads transported by the de Havillands and at the same time were faster. Thus, the government led the way in the development of commercial aircraft.

The Post Office Department also pioneered the development of adequate ground facilities. In October of 1919, the Army Air Service undertook a transcontinental round-trip race. Most of the fliers never finished, and the big lesson which the adventure taught was the paramount importance of adequate preparation on the ground. At that time, the Post (*Continued on page 48*)



DEVOTION TO DUTY IS A TELEPHONE TRADITION

High morale, devotion to duty, ingenuity in meeting new circumstances and the ability and will to work with each other and with the public are traditional characteristics of telephone employees.

Times like these not only demand these characteristics, they serve to create and extend them.

Now, more than ever, the creed of telephone workers is expressed in these simple words . . . "We'll do our best to get your call through."

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"THE TELEPHONE HOUR" *is broadcast every Monday evening over the N. B. C. Red Network*

WINGS FOR A NATION

(*Continued from page 46*)

Office Department was in the midst of plans for a regular transcontinental service and immediately undertook to persuade the communities of the West to provide airports and hangars. The success of the department's efforts made the transcontinental air-mail service possible.

Next to inaugurating the service, the most significant achievement of the Post Office Department was the development of night flying. In the words of one writer, "Of all American contributions to the technique of air transport operation, this was the greatest."* Not content with the night-flying methods that had prevailed in France in 1918, the Army in 1921 started research at Wright Field, Dayton, Ohio. With the co-operation of manufacturers of illuminating equipment of various kinds, a system of route lighting was developed and installed between Dayton and Columbus, Ohio. This became the first regular night airway in the world. The basic plan was to install emergency fields at intervals of twenty-five miles, with a beacon at each field, and to supplement the beacons with blinker lights of less power spaced three or four miles apart. The planes were equipped with landing lights, beacon lights were installed along the route, and all fields were lighted and marked. The Post Office adopted the system developed by the Army and installed it on the airway from Chicago, Ill., to Cheyenne, Wyo. The lighted airway was extended to New York in 1924, and before the end of 1926 the beacons had been installed from coast to coast. The first *regular* through day and night schedule between New York and San Francisco was flown on August 21, 1923. The first *through* transcontinental flight had been made on February 22, 1921, but was in the nature of a demonstration. The total elapsed time for this trip was thirty-three hours and twenty minutes, and the actual flying time was twenty-five hours and sixteen minutes. The night leg, flown by Pilot Jack Knight, is now one of the classic stories of aviation.

The government also has made outstanding contributions to civil aviation through research. At the forefront of this work has been the National Advisory Committee for Aeronautics, although the Army and Navy have also made important contributions. Established by an act of Congress approved March 3, 1915, the N.A.C.A. has, under the law, two basic functions: First, in its own laboratories it conducts fundamental research on problems of aeronautics for the Army, the Navy, and civilian purposes; second, it co-ordinates research undertaken by various other governmental and private agencies, and advises responsible officials of the progress of this work. The committee is made up of two representatives each from the Army, the Navy, and the Civil Aeronautics Authority, and one representative each from the Weather Bureau, the Bureau of Standards, and the Smithsonian Institution. In addition, the committee has six members who, on the basis of their experience in aeronautical science, are appointed by the President for (*Continued on page 50*)

* Edward P. Warner, '17, *The Early History of Air Transportation* (Northfield, Vt.: Norwich University, 1938), p. 27.

WINGS FOR A NATION

(*Continued from page 48*)

limited periods of time. All members of the committee serve as such without compensation. In the development of unique aeronautical research facilities in its laboratories at Langley Field, Va., the committee has led the world; its work is carried on, however, without flare and with almost no publicity. The results of researches and experiments conducted under one control serve, without duplication of effort, the needs of all branches of aviation and exert a profound influence on the progress of aeronautics by improving the performance and safety of aircraft. Some of the chief characteristics of modern aircraft are a direct result of the application of principles developed by the N.A.C.A. in the course of its research. Among the most notable of these are the N.A.C.A. cowling, the wing-nacelle position on modern multi-engined aircraft, the valve overlap, high-lift devices, the N.A.C.A. 23012 airfoil, and the N.A.C.A. closely finned cylinder.

The Army and Navy research organizations have been mainly concerned with the performance of military aircraft, but some of their experiments have been significant from the standpoint of commercial flight. The Army, as already mentioned, conducted the first experiments with lighted airways and recently has been making tests on pressure-sealed airplanes for high-level flying. In 1938 the Army Air Corps was awarded the Collier Trophy for the development of the first pressurized cabin airplane. The Navy has taken the lead in the development of seaplanes, and the first catapult for the launching of aircraft from ships at sea was designed in the Navy's gun factory in Washington, D. C., in 1912. It was the Navy's NC-4 which, in 1919, made the first successful crossing of the North Atlantic by air, a flight which might be termed the forerunner of the present-day transatlantic service.

The close relationship between the weather and aviation has been recognized for a long time. Interestingly enough, the Wright brothers first learned of the desirability of the Kill Devil sand hills near Kitty Hawk, N. C., as a place for conducting experiments with gliders, in a letter from the United States Weather Bureau. The entry of the United States into the World War, however, marked the first official recognition of the necessity for a special meteorological service for aeronautics. The Weather Bureau has worked continuously since that time in the development of special techniques and reporting methods adapted to the problems of aviation. This work took on still greater significance when, in connection with the passage of the Air Commerce Act in 1926, the Weather Bureau's organic act was amended to include specifically the furnishing of weather reports, forecasts, and warnings "to promote the safety and efficiency of air navigation in the United States and above the high seas, particularly upon civil airways designated by the Secretary of Commerce. . . ."

The program of the Civil Aeronautics Administration represents another highly important phase of the government's work. The airways (*Concluded on page 52*)

WINGS FOR A NATION

(*Concluded from page 50*)

which were established by the Post Office Department were turned over to the Department of Commerce under authority of the Air Commerce Act of 1926, and the extension and further development of them have continued since that time. The Civil Aeronautics Act of 1938 transferred the operation of these facilities to the Administrator of the Civil Aeronautics Authority.

The civil airways are the highways of air commerce. Their importance to commercial operations and to the private flier cannot be over-emphasized. At the end of 1940, an estimated 30,488 miles of adequately lighted airways, fully equipped with radio-communication equipment and weather-reporting facilities, were in operation in the United States and its possessions. Nine hundred and fourteen intermediate and auxiliary landing fields were available along these routes. For the transmission of weather information, a total of 28,050 miles of teletype weather-reporting circuits were in operation on January 1, and the teletype traffic-control mileage was 12,260. The Civil Aeronautics Administration has already installed two relatively static-free ultra-high-frequency radio stations, together with 114 fan markers and one instrument approach system, as a part of a new and highly improved method for flying in bad weather. Under present plans, 10 range stations of this new type, 157 markers, and nine instrument approach systems will be in operation this year.

The Civilian Pilot Training program, which is also under the jurisdiction of the Administrator, resulted in the granting of 25,168 private pilots' certificates during 1940. Preliminary flight courses were being completed by 15,000 additional trainees at the end of the year. Congress authorized funds for the training of 45,000 pilots during the fiscal year which began July 1, 1940.

In still another way, civil aviation is assisted by the Civil Aeronautics Board, whose three chief functions may be outlined briefly as follows: first, regulation of the economic aspects of air-carrier operations; second, promulgation of safety standards and civil air-regulations; and, third, investigation of aircraft accidents with a view to studying and reporting means of preventing their recurrence. This phase of the government's contribution is vital to the encouragement and development of an air-transportation system properly adapted to the present and future needs of the foreign and domestic commerce of the United States, the Postal Service, and the national defense.

DIVIDING THE WORK

(*Continued from page 28*)

To offset these disadvantages is the security of tenure felt by older employees. This security is, indeed, so highly prized by many workmen that in some cases the question may arise whether it does not militate against their maximum advancement as to both wages and promotion over the longer term. This factor applies particularly to older men who are, because of longer length of service, protected against early layoff. Such men usually think twice before changing jobs and being placed at the bottom of the priority list in a new employment. Under the rules of certain unions, a man who during a slack period accepts a temporary or short-time job in another shop loses his seniority in his regular position. In such cases seniority, though designed to protect the job of an employee, obviously operates to keep him completely unemployed. Under seniority, however, older employees, knowing that their jobs are protected, tend to maintain their productive efficiency. The younger employees, too, recognizing that management during times of declining business has the right to dispense with their services, also seek to keep up their efficiency. The right of management to lay off workers, even by rotation, tends to instill a performance among all workers which is largely lacking under the stagger system. The natural work incentives which are set by the seniority principle thus tend to maintain at least a stable, if not a declining, level of unit costs during a depression, thus helping to preserve the competitive strength of organized plants which, compared to unorganized plants, usually operate at a distinct disadvantage as to unit costs.

Leaders of organized labor are usually loath to admit that in industry such a thing exists as interplant competition or interregional competition which they must recognize in making or in administering a union contract. Yet every plant is in competition with every other plant within its industry and frequently even with plants outside its particular industry. This fact holds notably between union and nonunion plants.

Thus when employment in unorganized centers diminishes, the first shift continues to work full time; as a rule, it does not share work with the second shift. When employment for the second shift drops below three or four hours a day, the second shift is laid off entirely and the first takes up the additional load by working overtime, a ten or even an eleven-hour day. The flexible way in which unorganized centers manage labor makes them intensely more competitive in slack seasons than in busy seasons.

Labor in organized centers hence would do well to recognize the fact that the canon by which business is judged is still the per cent profit it makes. Nothing inherent exists in the stagger system as such which is vital to the maintenance of trade unionism. Indeed various highly organized trades have, instead of the stagger method, an out-and-out seniority system covering all employees. Workers in these industries are as keenly interested in the solidarity of labor as are workers in industries with the stagger system. Yet they have deliberately forsworn the stagger system and adopted seniority to distribute work in slack seasons.

Seniority is not necessarily coupled with the opportunity for promotion. Other things being equal, one would naturally expect older men, because of their experience, to hold the more responsible positions. But "things" are not always equal; mere length of service does not endow a man with those personal qualifications required for progress up the promotional ladder. Not time but ability should be the way to promotion.

Recognizing that the security of jobs to employees is a most important phase of the maintenance of a permanent supply of satisfactory labor, some large industrial organizations have in recent years experimented with the payment of layoff allowances during slack periods as well as separation allowances or dismissal wages upon the termination of employment.

No matter how effective such measures as layoff allowances may be in some cases, they are, like seniority and the stagger system, but halfway measures in solving the problem of unemployment. Seniority cuts from the pay roll junior employees, one by one in reverse order according to length of service; the stagger system spreads a progressively reduced pay roll in thinner and thinner pay envelopes among a constant number of employees; layoff allowances, like installment buying, merely mortgage future earning power of employees. The first lays off younger employees with no pay at all; the second steadily reduces the pay of all employees, old as well as new; and the third, in making advances of as yet unearned income, garnishees, as it were, future wages of employees but does not guarantee payment of those wages. Each measure, like social security in establishing unemployment insurance, alleviates the lot of the unemployed worker and is to that extent a constructive contribution to both the individual and the social welfare. But each method, at least by implication, views unemployment as a permanently recurring phase in the business cycle which is by nature incurable and against which only precautions of an ameliorative character may be taken. Each measure, therefore, assumes the evils of unemployment to be inescapable and unpreventable.

A policy designed to remedy violent fluctuations in the employment structure must be based upon more positive assumptions. In its essential principles such a policy must rest upon an affirmation of faith that, no matter how difficult, a program may be evolved which will exercise such a profound influence upon the production cycle that casual employment in different industries and trades may be decasualized; that seasonal fluctuations may be regularized or at least so dovetailed into operations of an opposite seasonality as to produce practically uniform employment.

Since the corollary of seasonal employment is seasonal unemployment, the employer, instead of turning labor on and off as so much water in a hydrant, must do everything in his power to provide steady employment. That is the philosophy back of merit rating in unemployment insurance. With the passage of time and accumulation of additional experience, the principle of merit rating may very probably be carried to a point where most of our present seasonal employment will be made so unprofitable through differential taxation that it will have to give way to something approaching steady, year-round (*Concluded on page 54*)

DIVIDING THE WORK

(*Concluded from page 52*)

employment. The first step toward this end has already been taken. Wise managements will, through better planning, elimination of bottlenecks in production, diversification of products and markets, adoption of more intelligent merchandising methods, farming out orders at peak seasons, as well as development of a more enlightened policy regarding stability of employment, arrange their businesses in a manner to obviate as far as possible need for highly seasonal fluctuations in employment.

MAIL RETURNS

(*Concluded from page 8*)

failure of the United States to support Great Britain by force means the United States will be vanquished has been denied by several writers on military subjects. We need to remember also that the United States used the methods of the highwayman in getting the Panama Canal, so vital to our safety, as Dwight C. Miner has shown so well in *The Fight for the Panama Route.*

The question then is what concessions Great Britain and the United States are willing to make in meeting the issue that all men shall have healthful living. Both are in the fortunate position of being in almost complete control of all supplies they need.

That, in general, industry and labor have any conception of the problems involved in these concessions is doubtful. The activity of the Communists, for example, is based mainly on their argument of maldistribution of wealth or goods, but society appears to have found so far no better answer at the mildest than epithets, and at the worst, physical violence. The aristocracy of England was so afraid of social changes necessary for the well-being of the poor that it welcomed Hitler's progress until the bitter truth became all too evident. This charge is supported by Francis Williams in *War by Revolution.*

Only in the United States has there been an approach to an equitable attack on the social problems involved in food, housing, and clothing for the poor. The Democratic party attacked them in 1933, but like all political parties too long in power, errors have been made and abuses have developed.

Roosevelt pledged in 1940 that he would keep the country out of war, although he must have known how bad conditions were in Europe. He has sought more and more power, such as the excessive requirements in the original property-seizure bill. A marked tendency obviously exists for the emergence of a dictatorship through the substitution of an all-powerful chief executive for our parliamentary institutions on the plea that the latter are too slow moving.

The national debt has advanced from $20,000,000,000 to $50,000,000,000 and the cost of help to Great Britain and defense is predicted as likely to exceed $100,000,000,000 more. The tragedy is that the contemplated expenditure would provide attractive, low-cost homes for a large portion of the 60,000,000 people in the United States who have abnormally low incomes. For in spite of the efforts of the Democratic party, the fundamental issue of food, housing, and clothing for the poor of this country (let alone of the world) has not been met successfully, and the riddle of excess production and millions of starving men, out of work, has not been solved. So long as the war lasts, the Democratic party does not have to meet the issue, nor solve the riddle. It can continue to thrive as every political party does when it has ample funds to spend. The suspicion, nay the conviction, that it is more interested in war than in peace is more than justified when no adequate effort to negotiate a peace is made. For in the end, peace will come and the terms of it will be written around a conference table either by men with hate in their thoughts or love for their fellowmen.

And yet we are assured that there are no subtleties to perplex and that only strong, simple virtues are needed in the defense of human rights when the real issue is food, housing, and clothing for the poor all over the world. For freedom cannot be enjoyed by the citizen who is cold and starved, and democracy cannot endure if he must fight to live.

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TECHNOLOGY MEN IN ACTION

THE ALUMNI FUND—ITS PROBLEMS AND GROWTH

M.I.T. ALUMNI BOOST FUND

Richmond Predicts Banner Year

CAMBRIDGE, Sept. 22: "Success", said H. B. Richmond '14, Chairman of the M.I.T. Alumni Fund, in a special interview today, "is definitely in sight. At the present time over 25% more Technology Alumni have contributed in this, the second year of the Fund, than at the same time last year. And furthermore contributions have increased by 36%. The growth is healthy, and I am convinced the time is not far off when we will have achieved our goal — $150,000 annually from 10,000 men."

Mr. Richmond explained in some detail the aims and purposes of the annual program of giving, established last year to replace those spasmodic drives for special purposes which had previously been the rule. "We thought Tech men would appreciate the orderly, systematic aspect of the thing," stated Richmond. "In our first year 7,865 Alumni proved how right we were. They showed, in finite form, their realization of the drains which current conditions have placed upon the Institute's financial structure, the national trends which are depleting the numbers of large givers, and the necessity for offsetting the consequently lessened capital fund additions with a great number of relatively modest contributions."

The Chairman firmly believes that those who last year "assisted in the launching" will remain on board for the rest of the trip. These Alumni, he feels sure, constitute the nucleus of an ever increasing group which, in years to come, will pass the present 30% quota and reach a figure comparable to Dartmouth's 55%, Amherst's 46% — or even Wellesley's 45%. "Tech's Alumni," he assured the reporter, "do not need to be sold on the Institute. Loyalty is a trite word, but whatever you call it, they have it. These are trying times, and it is often difficult to know what one can believe in. Those who were on the Fund rolls last year gave visible evidence of their affection for Technology and their belief in its future. I am certain that they will continue to re-affirm that belief, not only this year but in years to come."

FINANCIAL REPORT ***By Dahl***

A Report on the M.I.T. Alumni Fund as the Boston Herald might have presented it

ALUMNI AND OFFICERS IN THE NEWS

Honor

¶ To ARCHER E. WHEELER '95, by his election to honorary membership in the Electrochemical Society, Inc.

¶ To WILLIAM S. NEWELL '99, by the awarding of the honorary degree of doctor of laws by Colby College, Waterville, Maine.

¶ To GEORGE R. SPALDING '04, by the awarding of a George W. Fuller Memorial Award of the American Water Works Association, Toronto, Ontario, June 26.

¶ To CARL J. TRAUERMAN '07, by his election as secretary-manager of the Mining Association of Montana.

¶ To THOMAS G. CHAPMAN '09, by his election to honorary membership in Chi chapter of Theta Tau, national engineering fraternity.

¶ To JEROME C. HUNSAKER '12, by his appointment as co-ordinator of research and development for the Navy.

¶ To FRANCES STERN '13, by an article, "The Woman Who Taught the World What to Eat," describing her work at the food clinic in the Boston Dispensary. The story, by E. M. Hiller, appeared in the *Tuftonian*, May.

¶ To WILLARD C. BROWN '16, by his election as president of the Illuminating Engineering Society.

¶ To WALTER G. WHITMAN '17, by his appointment as oil consultant for the Office of Production Management. He succeeds ROBERT E. WILSON '16.

¶ To EARL P. STEVENSON '19, by the awarding of the honorary degree of master of arts by Wesleyan University, Middletown, Conn.

¶ To LAWRENCE W. CONANT '21, by his selection as the typical father, Washington, D.C., Father's Day, 1941.

¶ To VICTOR O. HOMERBERG '21, by the awarding of the honorary degree of doctor of science by the Philadelphia College of Pharmacy and Science.

¶ To ANDREW E. VAUGHAN, JR., '23, by his election as southeastern Pennsylvania district governor of Rotary International, at Denver, Colo.

¶ To LESTER TARNOPOL '24 and J. R. Morgan, by the awarding of the first prize at the White Sulphur Springs meeting of the American Institute of Mining and Metallurgical Engineers, for their paper, "Damping Capacities of S.A.E. 1020 and 2320 Steels," June 27.

¶ To ANTOINE M. GAUDIN, staff, by the awarding of the honorary degree of doctor of science by Montana School of Mines.

Speaker

¶ VANNEVAR BUSH '16, the commencement address at Tufts College, Medford, June 15.

¶ RUDOLF E. GRUBER '16, on "The New Sulfa Drugs," at the Women's Press Club, New York City, May 24.

¶ BERNARD S. COLEMAN '19, on "Mass X-Raying of Tuberculosis Workers," before the National Conference of Social Work and New Jersey Tuberculosis League, Atlantic City, June 3.

¶ BENJAMIN S. KELSEY '28, on "Total Defense," before the Engineers' Club of Cincinnati, the American Society of Mechanical Engineers, and the Society of American Military Engineers, Cincinnati, September 18.

¶ JOHN G. KIRKWOOD '29, ADRIAN J. GROSSMAN '41, and ERNST A. HAUSER, staff, on surface chemistry, at the University of Chicago's fiftieth anniversary symposia, September 23 and 24.

Written

¶ By ALFRED P. SLOAN, JR., '95 and Boyden Sparks, *Adventures of a White-Collar Man*, Doubleday. KARL T. COMPTON, President, wrote the introduction.

¶ By JEROME C. HUNSAKER '12, "Research in Aeronautics"; H. B. RICHMOND '14 and DUGALD C. JACKSON, emeritus, "Industrial Research in the Field of Electrical Engineering"; DEXTER NORTH '16, "Research Abroad"; RAYMOND STEVENS '17, "A Report on Industrial Research as a National Resource"; FAIRFIELD E. RAYMOND '21, "Research — A Resource to Small Companies"; PER K. FROLICH '23, G. H. B. Davis, and H.G. M. Fischer, "Research in the Petroleum Industry"; ELMER HUTCHISSON '24 and L. O. Grondahl, "Physical Research in Industry as a National Resource"; FRANKLIN S. COOPER '36, "Location and Extent of Industrial Research Activity in the United States"; KARL T. COMPTON, President, "Industrial Research Expenditures"; and by HOWARD R. BARTLETT, staff, "The Development of Industrial Research in the United States" — sections of *Research — A National Resource: Part II, Industrial Research*, United States Government Printing Office.

¶ By JAMES A. TOBEY '15, "Public Health and the Law," *American Journal of Public Health*, June; and with W. H. Cathcart, "Fortification and Restoration in the Baking and Dairy Industries," *Industrial and Engineering Chemistry*, June.

¶ By HAROLD F. DODGE '16, "Guide for Quality Control" and "Control Chart Method of Analyzing Data," American Standards Association, May.

¶ By IRVING FINEMAN '17, *Jacob*, Random House.

¶ By SAMUEL CHAMBERLAIN '18, *This Realm, This England*, Hastings House.

¶ By PETER M. STRANG '18, "Sun Spots, Ionization of Air and Textiles," *Textile Research*, September.

¶ By EDWARD ELLSBERG '20, *Captain Paul*, Dodd, Mead.

¶ By DAVID O. WOODBURY '21, *The Colorado Conquest*, Dodd, Mead.

¶ By GEORGE H. ROCKWOOD, JR., '26, "Current Rating and Life of Cold-Cathode Tubes," American Institute of Electrical Engineers.

¶ By LESLIE E. SIMON '29, *An Engineer's Manual of Statistical Methods*, John Wiley.

¶ By J. HOWARD ARNOLD '31, *Chemical Engineering Stoichiometry*, published by the author.

¶ By DONALD C. GUTLEBEN '35, "Sugar House Junket," *Honey Dew News*, June.

¶ By HERBERT B. DWIGHT, staff, *Mathematical Tables*, McGraw-Hill.

¶ By EUGENE RABINOWITCH, staff, *Photosynthesis*, Interscience Publishers.

¶ By GEORGE DE SANTILLANA, staff, "The Development of Rationalism and Empiricism," a discussion of the aspects of scientific rationalism in the Nineteenth Century, "International Encyclopedia of Unified Science," Vol. II, No. 8, University of Chicago Press.

DEATHS

** Mentioned in class notes.*

¶ William E. Brotherton '73, May 21.*
¶ Charles R. Fletcher '76, September 10.*
¶ Wallace Hackett '77, February 15, 1939.*
¶ Lucius M. Leach '77, February 3.*
¶ Caroline Doane Weeden (Mrs. W. O.) '80, May 27.
¶ Thomas B. Carson '82, July 31.
¶ David McClure, Jr., '82, August 5.
¶ Frank H. Cutter '85, August 6.*
¶ Ella L. Macomber '85, June 19.
¶ Otis R. Clark '86, February 17.
¶ Franklin N. Isham '86, a year ago.
¶ Charles D. Turnbull '86, November 22, 1940.
¶ Jarvis Hunt '87, June 16.*
¶ Frank A. Merrill '87, July 23.*
¶ Arthur B. Frizell '88, March 2.
¶ Francis L. V. Hoppin '88, September 9.*
¶ Frank A. Moore '88, August 2.*
¶ Jasper Whiting '89, August 18.
¶ William L. Murdock '90, July 22.*
¶ Charles R. Nason '90, March 1.*
¶ William Z. Ripley '90, August 16.*
¶ Jeremiah Campbell '91, September 6.*
¶ Ida T. Weeks '91, July 27.
¶ Barton P. Jenks '92, January 13.
¶ Arthur M. Burtt '93, April 19.*
¶ William H. Cadwell '93, February 20.*
¶ Charles F. Fitz, Jr., '93, July 11.*
¶ Daniel D. Jackson '93, September 2.*
¶ Robert D. Reynolds '93, July 2.*
¶ Samuel G. Reed '94, July 22.
¶ Albert H. Sawyer '94, April 18.*
¶ Harold C. Buckminster '95, September 27.
¶ Arthur S. Coburn '95, April 17.*
¶ Elizabeth F. Fisher '95, April 25.*
¶ Bertha Bartlett Hibbard (Mrs. T.) '95, January 19.*
¶ Edward L. Hurd '95, May 26.*
¶ Winslow A. Wilson '95, April 29.*
¶ Alfred E. Zapf '95, August 29.*
¶ William Q. Huey '96, September 17.*
¶ Louis F. Buff '97, August 29.*
¶ James G. Moran '97, April 12.*
¶ Michael A. Sullivan '97, June 17, 1940.*

ALUMNI ASSOCIATION

of the

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

OFFICERS

President, B. Edwin Hutchinson '09 (Term expires June 30, 1942)
Vice-Presidents { John E. Burchard '23 (Term expires June 30, 1942)
Harold Bugbee '20 (Term expires June 30, 1943)
Secretary, Charles E Locke '96 (Term expires June 30, 1942)
Treasurer, Ralph T. Jope '28 (Term expires June 30, 1942)

Executive Committee

The President, Vice-Presidents, Secretary, and Treasurer
and
Nathaniel McL. Sage '13 (Term expires June 30, 1942)
Francis A. Barrett '24 (Term expires June 30, 1942)
Herbert S. Cleverdon '10 (Term expires June 30, 1943)
C. Yardley Chittick '22 (Term expires June 30, 1943)

TERM MEMBERS OF THE CORPORATION

Nominated by the Association

Term Expires June, 1942

Albert F. Sulzer '01
George E. Whitwell '14
William E. R. Covell '23

Term Expires June, 1943

Harry P. Charlesworth '05
Donald G. Robbins '07
Marshall B. Dalton '15

Term Expires June, 1944

Philip W. Moore '01
Charles Edison '13
H. B. Richmond '14

Term Expires June, 1945

Page Golsan '12
Egbert C. Hadley '14
Alfred H. Schoellkopf '15

Term Expires June, 1946

George J. Mead '16
Robert E. Wilson '16
E. Pennell Brooks '17

National Nominating Committee

Terms Expire on April 14 of Year Indicated

Term Expires 1942

District 3: Alfred W. Hough '19
District 6: Walter J. Beadle '17
District 7: Franklin Fricker '25

Term Expires 1943

District 1: Charles R. Main '09
District 2: Stanley W. Hyde '17
District 4: Kenneth M. Cunningham '22
District 5: Charles P. Fiske '14

Term Expires 1944

District 8: Charles A. Smith '99
District 9: Winter Dean '21
District 10: Edward E. Scofield '19

The condensed directory above lists Alumni Association officers, term members whom Alumni elect to the Corporation of the Institute, and the National Nominating Committee of the Association, whose function is the presentation of candidates for these and other offices. Alumni who would offer suggestions, criticism, comment, on Association affairs or on the mutually helpful relationship existing between the Association and the Institute may wish to communicate with individuals here named. Their postal addresses will be supplied by The Review *upon request, or letters addressed to them in care of* The Review *will be forwarded promptly.*

¶ Theodore E. Videto '97, March 10.*

¶ Carroll Bennink '98, June 20.*

¶ Thomas Carroll '98, February 7.*

¶ Mabel Clapp Lord (Mrs. F. T.) '98, July 11.

¶ Hope W. Narey '99, September 28.

¶ George O. Adams '00, June 22.*

¶ William A. Dorey '00, a year ago.*

¶ Walter E. Rabbeth '00, October 14, 1940.*

¶ Arthur A. Reimer '00, July 7.*

¶ George A. Clark '01, June 30.

¶ Julius E. Ober '01, April.

¶ Arthur F. Butler '02, May 19.*

¶ Thomas M. Hamilton '03, September 5.

¶ Maurice C. Tompkins '04, June 17.*

¶ George Jason, Jr., '05, July 23.*

¶ John H. McManus '05, September 6.*

¶ Robert H. Doepke '06, May 18.*

¶ Harry C. Merriam '06, June 27.*

¶ James Reed '07, July 23.*

¶ Leavitt W. Thurlow '08, March 11.*

¶ William F. Jones '09, May 9.*

¶ Herbert Angell '11, May 20.*

¶ Frederick E. Poor '12, August 5.

¶ Daniel J. Danker '15, May 29.*

¶ John P. Sutherland '16, February 22.

¶ Carlos S. Rood '17, June 13.

¶ Benjamin L. Whorf '18, July 26. Anthropologists say his deciphering of twenty-three Mayan letters may go down in history as an accomplishment comparable to the translation of the Rosetta stone. His contributions to The Review, discussing linguistic science, were among the most widely acclaimed articles which the magazine has had the privilege of carrying.

¶ Edward F. Pierce, Jr., '19, August 10.*

¶ Paul W. Fletcher '21, August 15, 1940.*

¶ James M. Young '21, October 17, 1939.*

¶ Mary Child Munro (Mrs. H. H.) '22, August, 1940.

¶ Frederick E. Owen '22, July 10, 1939.

¶ William B. Peale '22, June.

¶ Mahlon K. Quealy '24, July 12.

¶ Gerald Milot '25, March 11.

¶ S. Bernard Gahm '27, September 27, 1940.

¶ Howard N. Lary '27, August 6.*

¶ George W. Evans '33, June 5.

¶ Joseph M. Smith '36, September 13.*

¶ Abbott S. Maeder '38, September 21.

COMPARATIVE SCHOLASTIC STANDINGS OF UNDERGRADUATE ACTIVITY, DORMITORY, AND FRATERNITY GROUPS

(Based on June, 1941, Ratings)

	Average	*Increase over June, 1940*	*Corresponding Rank in June, 1940*
1. Officers of the M.I.T.A.A.	4.23	*0.07	1
2. Tau Beta Pi	4.22	*0.02	2
3. Alpha Chi Sigma	3.83	0.14	6
4. M.I.T. Student House	3.77	0.18	11
5. Chi Epsilon	3.76	*0.19	3
6. Institute Committee	3.752	0.160	10
7. Varsity Sports Captains	3.75	0.18	12
Average of 182 men engaged in Athletic Activities	3.67	0.00	
8. Lambda Chi Alpha	3.61	0.16	16
9. T.E.N. Management	3.60	*0.04	7
10. Dormitory Committee	3.58	0.06	14
11. Sigma Alpha Mu	3.56	0.03	13
12. Kappa Sigma	3.53	0.28	33
Average of 474 men in 19 Activity Groups	3.50	*0.085	
13. Sigma Nu	3.46	0.015	18
14. Wearers of the "T"	3.45	*0.17	8
15. Sigma Chi	3.44	0.06	24
16. Wearers of Institute Insignia	3.43	*0.02	17
17. Pi Lambda Phi†	3.41	0.05	25
Average of 640 Dormitory Residents	3.40	0.03	
18. Sigma Alpha Epsilon	3.40	0.27	40
19. Technique Management	3.39	0.094	31
Average of 124 men holding Managerial Positions	3.388	*0.201	
20. Varsity Sports Managers	3.37	*0.03	23
21. Phi Delta Theta	3.362	*0.082	19
22. Theta Chi	3.36	0.02	27
General average of all Undergraduates	3.35	0.04	
23. Delta Tau Delta	3.34	0.19	39
24. Technique Staff	3.32	0.03	32
25. T.C.A. Cabinet	3.31	*0.16	15
26. Delta Upsilon	3.30	0.00	30
Average of 149 men in Publication Activities	3.29	*0.106	
27. The Tech Management	3.28	*0.42	5
Average of 99 men on Staffs of Activities but not holding Managerial or Executive Positions	3.27	*0.07	
Average of 718 members of 24 Social Fraternities (does not include Tau Beta Pi, Alpha Chi Sigma, and Chi Epsilon)	3.26	*0.04	
28. The Tech Staff	3.23	*0.083	29
29. Voo Doo Staff	3.22	*0.11	28
29. Voo Doo Management	3.22	0.042	36
30. Theta Delta Chi	3.219	*0.131	26
31. Beta Theta Pi	3.21	0.034	38
32. Phi Gamma Delta	3.188	*0.257	18
33. Alpha Tau Omega	3.187	*0.413	9
34. Phi Kappa Sigma	3.185	*0.025	34
35. Phi Mu Delta	3.18	0.20	42
36. Theta Xi	3.17	*0.039	35
37. Phi Beta Epsilon	3.16	*0.24	22
38. T.E.N. Staff	3.12	*0.307	21
39. Phi Kappa	3.07	‡	‡
40. Phi Sigma Kappa	3.02	*0.41	20
41. Chi Phi	2.99	0.03	43
42. Delta Kappa Epsilon	2.87	*0.307	37
43. Delta Psi	2.66	*0.45	41

* Decrease

† Formerly Phi Beta Delta

‡ Not rated last year

NEWS FROM THE CLUBS AND CLASSES

CLUB NOTES

Montana Society of the M.I.T.

At a meeting of the Society in the New Finlen Hotel in Butte on August 22, William L. Creden '90 was elected chairman and Earl S. Bardwell '06, vice-chairman. Charles E Locke '96, Alumni Secretary, reported on affairs in Cambridge. Francis A. Thomson, president of the Montana School of Mines, was a guest.

The following resolution concerning Albert E. Wiggin '07 was presented by Carl J. Trauerman '07, chairman of the resolutions committee, and was recorded: "Whereas God in His wisdom has seen fit to take from us our beloved friend, good citizen, and distinguished mining engineer and metallurgist, Albert E. Wiggin;

"Whereas Albert E. Wiggin was born at Malden, Massachusetts, January 12, 1885, received his early education at Wakefield, Massachusetts, and his higher education at the Massachusetts Institute of Technology from which he was graduated in 1907; after which he came to Montana to practice his profession, being employed continuously by the Anaconda Copper Mining Company from 1907 until his untimely death on April 18, 1941. He first performed research work at Great Falls and from 1911 until 1918 he rebuilt the copper concentrating plant at Anaconda, returning to Great Falls in 1918. In 1929 he was named Montana metallurgical manager of the Anaconda Copper Mining Company, having charge of all the metallurgical plants of the company in Montana. Besides making a reputation as one of America's foremost metallurgists, he was a good friend to labor and a civic and business leader in Great Falls and Montana. Upon the death of Charles W. Goodale ['75], Mr. Wiggin was elected chairman of the Montana Society of the M.I.T., a position which he held until his death. It was mainly due to his efforts that Montana led the regional drive for funds for the M.I.T. Alumni Association a few years ago. . . .

"Therefore, be it resolved, that we, the Montana Society of the M.I.T., mourn his passing, that we express the regret we feel at the loss of so good a friend and fellow alumnus, and that we give to the members of his family our sincere sympathy.

"Be it further resolved that a copy of this resolution be spread upon the minutes of our organization; that a copy be sent to the family of our deceased friend, to the M.I.T. Alumni Association, and to the press." — WALTER R. C. RUSSERT '18, *Secretary*, Post Office Box 644, Butte, Mont.

Technology Club of Lake Superior

Several members of the Club had the pleasure of meeting Charles E Locke '96, Alumni Secretary, when he was in Duluth attending a mining conference in August. Unfortunately, conditions prevented a formal meeting of the Club during his visit. — WILLIAM C. LOUNSBURY '03, *Secretary*, Minnesota Power and Light Company, First Avenue West and Superior Street, Duluth, Minn.

M.I.T. Club of Northern New Jersey

The committee for the fall smoker met at the Newark Athletic Club on September 24 to complete arrangements for the first meeting of the year. The members of the committee are: Newman H. Drake '30, chairman, Maxwell K. Burckett '21, President of the Club, Stewart C. Coey '06, Harold F. Ballard '09, Henry C. Colson, Jr., '09, James F. Maguire '17, Sumner Hayward '21, Frederick E. Kowarsky '21, John M. Keck '23, Charles P. McHugh '26, Newton S. Foster '28, Warren H. Dolben '30, Walter L. Wise, Jr., '34, Roy W. Smith '37, and Albert W. Beucker '40.

The following program was worked out: The date, November 12; the place, Newark Athletic Club; the time, 8:00 P.M.; the speakers, Dr. Moore of the Bakelite Corporation, who will describe and demonstrate some of the latest tricks with plastics, and Richard Rigor, a professor at Rutgers University, who will give some amusing instructions on public speaking.

The committee expect a large turnout for this meeting. They have not forgotten to include refreshments — beer and sinkers — and smokes. — NEWTON S. FOSTER '28, *Secretary*, 73 Daniel Avenue, Rutherford, N.J. *Assistant Secretaries:* ROBERT F. WAY '33 and WALTER L. WISE, JR., '34, Colgate-Palmolive-Peet Company, 105 Hudson Street, Jersey City, N.J.

Technology Club of New York

The third annual Technology golf tournament was held at the Knollwood Country Club, Elmsford, Westchester County, on June 26. More than sixty members and their guests were present, making this the most successful tournament of the series. The fact that the attendance was almost twice that of last year is proof of the snowballing popularity of this annual event.

Jim Walker '26, winner of the President's Cup for the last two years, was dethroned this year by Buzz Burroughs '20, who came in under the wire with a scant 84. Jim was third in the contest, two strokes behind the winner. Mike Radoslovich '26, making his golfing debut, led the field for high scores with a thumping 191½. The one-half arose as the result of a lengthy discussion as to whether a particular whiff on the seventeenth hole was a practice swing or an actual shot.

During the day, facilities for swimming, paddle tennis, and bridge were provided for those who forgot to bring their golf clubs. Seventeen prizes for winners of the golf tournament and sundry other prizes for winners of the other contests were awarded at the dinner in the evening. Entertainment at the dinner was furnished by an amateur caricaturist, J. Rosen, who drew some exceptionally interesting portraits of some of those present.

So enjoyable was the affair that the success of next year's tournament is definitely assured. All present indicated a desire to attend the next one wherever and whenever it may take place.

The annual Technology Club bridge tournament for the Dick Ranger Trophy began on October 8, continuing for six successive Wednesday nights under the direction of W. H. Latham '26. Any Club member and his guests are eligible to participate for the trophy and for the other prizes.

The fall season of the Club is now getting under way with a large number of class and course events planned. A special party to acquaint men in the younger classes with the clubhouse and its facilities will soon be announced. The restaurants and the taproom on the first floor are enjoying an ever increasing patronage, and the special all-Technology round table is always full at lunch time. — WILLIAM D. NEUBERG '18, *Secretary*, 24 East 39th Street, New York, N.Y. CONSTANTINE S. DADAKIS '34, *Publicity Committee*, 644 Riverside Drive, New York, N.Y.

Technology Club of Panama

The Club held a dinner meeting on Saturday, September 13, at the Tivoli Hotel, Ancon, Canal Zone. Twenty-six M.I.T. men were present, a large increase over the number attending these meetings in the past. Because of increased activity in the Canal Zone, several new M.I.T. men are now on the Isthmus, many of them unknown to the others. This meeting, therefore, was really a get-acquainted gathering. The plan now is to hold meetings about every two months.

Those attending the dinner were: William H. Hubbard '00, Guy W. True '11, Randall Cremer '12, Meade Bolton '16, Harry Cole '21, Herman F. Finch '21, A. Eduardo Icaza '23, Isbell F. McIlhenny '23, Gordon H. Crabb '24, John W. Sibert, Jr., '25, Ralph Adams '26, Wilmot A.

Danielson '26, Edward F. Durbeck '28, Walter A. Key '29, Homer L. Davis, Jr., '30, Edmund L. Koperski '30, Howland S. Brewer '32, Frederick W. New '32, Hollinshead T. Martin '33, Dominico Martino '33, Constant W. Chase, Jr., '34, Alberto de St. Malo '35, George C. Dunlap '35, Gordon C. Edwards '35, James A. Cronvich '38, and Francisco J. Morales '39. — CONSTANT W. CHASE, JR., '34, *Secretary*, Box 77, Balboa Heights, Canal Zone.

M.I.T. Club of Western Maine

An enjoyable meeting of the Club was held on Sunday, September 7. The committee, of which H. Stanley Weymouth '19 of Augusta was chairman, had selected the Lighthouse Inn, six miles west of Augusta on the shore of Cobbosseecontee Lake, for their meeting, and this proved to be a delightful spot. An excellent steak dinner was served to forty-seven Technology men and their wives and friends. We were glad to welcome members from the Technology Club of Eastern and Northern Maine, who joined us in the meeting. Malcolm S. Howe '22 briefly outlined the activities of the Bangor Club for the past few years.

Charles B. Breed '97, Head of the Department of Civil and Sanitary Engineering at the Institute, was with us and told of a few of his experiences in connection with various defense projects.

We were particularly fortunate to have President and Mrs. Karl T. Compton as our special guests. Dr. Compton outlined the defense activities which are now being carried on at the Institute. Many of us were surprised to learn that the magnitude of the defense effort almost equals that of the regular educational activities.

Before the meeting adjourned late in the afternoon, pictures of Maine were shown on the screen. — All left hoping there would be a similar meeting next year. — ALFRED E. B. HALL '15, *Secretary*, 19 Locke Street, Saco, Maine.

Technology Club of Oregon

We enjoyed having Charles E Locke '96, Alumni Secretary, with us on August 28, but his visit was all too brief. Our President, Robert E. Cushman '06, took Professor Locke in tow for the day. They visited points of interest, including the dam and the powerhouse development at Bonneville. The start of the salmon migration was noted as the fish headed upstream by ladder and elevator.

After dinner at the Secretary's home, alumni friends of Professor Locke gathered for an informal evening.

Train time came as the Professor mentally dropped four hours from his Boston-set pocket piece, and the short day was over. — A. GLENN STANTON '21, *Secretary*, Railway Exchange Building, Portland, Ore.

Technology Club of Rhode Island

Sixty-one members and guests assembled on May 9 at the Rhode Island Country Club, Barrington, R.I., for the annual dinner, which was preceded by the customary cocktail hour. After dinner a short business meeting was held, during which the following officers were elected for the ensuing year: Donald G. Robbins '07, President; William E. Gould '28, Vice-President; Preston Richardson '92, Treasurer; and John M. Hanley '18, Secretary. New members of the club council elected for three years are Joseph Warren Lovell '13 and J. Edward Philbrick '32.

Present members of the council whose terms expire in 1942 are Edward S. Esty '18 and C. Wallace Bohrer '33; in 1943, Harold J. Creedon '27 and Freeman W. Fraim '32. The three most recent past presidents are George E. Colby '32, Evert W. Freeman '20, and John D. Eldert '27. Walter C. Wood '17 is our Alumni Representative.

Our guest of honor was Henry E. Worcester '97, President of the Alumni Association, who presented the greetings of fellow Alumni to the Club. Ralph T. Jope '28, Treasurer of the Association, spoke on current events at the Institute. He described the activity at the new swimming pool and gave information concerning Alumni Fund collections. At the conclusion of Mr. Jope's remarks the Club voted to have the Treasurer send fifty dollars to the M.I.T. Athletic Association to use in any fitting manner.

Horace S. Ford, Treasurer of M.I.T., took us back to Tech with movies of Technology activities. During his remarks he called attention to the fact that April 10, 1941, was the eightieth anniversary of the granting of the Institute's charter. Charles E Locke '96, Secretary of the Alumni Association, brought the greetings of fellow Alumni from various parts of the country.

The door prize, a table radio, was awarded to Duncan S. Owler '16, the holder of the winning number. The remainder of the evening was turned over to Dr. Scheer, prestidigitator extraordinary, who entertained the members and guests until adjournment.

On July 24, fifty members attended the Club's annual clambake at the Francis Farm, Rehoboth, Mass. The clans started gathering at 5:30 P.M. for the softball game. Nonplayers gathered around the beer keg in the old slaughterhouse. The committee presented a foaming glass of beer to each player who reached first base. While this generosity increased the errors, it loosened up the game and made it more enjoyable for the rocking-chair brigade on the porch. The score was never quite settled to anyone's satisfaction, for the game was interrupted by the dinner bell. All sat around one long table for a Rhode Island shore dinner.

After dinner, J. Burleigh Cheney '11 and his partner successfully defended their quoits championship against Norman MacLeod '14 and Bill Greenough, Jr., '23. Little higher mathematics was applied to the scoring in this game, and the mosquitoes and darkness finally won the match. The poker fiends then got busy, and the kibitzers kept them supplied with highballs.

The club council had dinner at Charlie's Diner, Seekonk, Mass., on July 15, afterward assembling at President Robbins' home in Barrington, R.I., where a tentative schedule of social events for the year was arranged. A boat ride to Potter's Cove for a picnic supper was planned for early September, but it had to be abandoned for lack of a suitable boat. The first gathering of the fall season, therefore, was a joint meeting in October with the Providence Engineering Society. Early in December we expect to go to the T K Club in Pawtucket for a dinner meeting; late in January or early February to attend the Ice Follies with the ladies; in March to go to the ever popular Anawan Club for one of their famous dinners of steak cooked over the hot coals, Rhode Island johnnycakes, and so forth; in April to have an Italian dinner meeting at the Pawtucket Gun Club, where we may try our luck at Italian bowling; and in May to hold the annual dinner and business meeting at the Rhode Island Country Club.

Notices of definite dates and other pertinent information concerning these meetings will in due course be sent to all club members. Technology men now living in Rhode Island who are not members of the Club are cordially invited to participate in its activities, which are designed primarily to keep the members from becoming dull. The Club has succeeded in developing several excellent storytellers, a few clowns, and a rather large number of engineers who have learned to drop temporarily the normal cloak of dignity. One member about to attend a Club meeting was asked by his ten-year-old son, "Where are you going, Dad?" The reply was, "To be a boy again." — JOHN M. HANLEY '18, *Secretary*, Post Office Box 1366, Providence, R.I.

Technology Club of the Connecticut Valley

The fall season of the Club got off to an excellent start on Wednesday, September 17, with a gathering of forty-four Alumni at the Hofbrauhaus, West Springfield, Mass.

The following officers were elected: President, Otto C. Kohler '31; Vice-President, Theodore F. Lang '01; Secretary, John G. Wheale '38; Treasurer, Theodore O. J. Kresser '34; and publicity chairman, Joseph D. Bates, Jr., '26. Those elected to the executive committee were: Frank J. Lange '09, Willard A. Emery '21, Leonard J. Brooks '23, Basil G. Constantine '26, Richard M. Cochrane '32, Donald A. Robb '33, Robert M. Jordan '34, and Morris E. Nicholson, Jr., '39.

The entertainment consisted, not of a speech by a doctor of laws or a professor of social hygiene, but of a short and humorous skit, entitled, "Double Exposure," put on by George W. Forrester '13, Warren H. Martell '30, Morris E. Nicholson, Jr., and John G. Wheale. The play was followed by two hours of good fellowship, singing, and beer drinking.

Other Alumni present were: N. P. Ames Carter '87, Edward G. Gallagher '00, Theodore F. Lange '01, Frank J. Lange '09, Carl H. Lovejoy '10, Wilson C. Broga '14, Albert M. Lovenberg '16, Willard A. Emery '21, Leonard J. Brooks '23, Neil A. MacNeil '23, George A. Rowen '23, Henry R. Harris '24, Arthur E. Benson '26, Basil G. Constantine '26, Cecil P. Thomas '26.

Still others were John C. Parker '27, Donald L. Ross '27, Nathaniel P. Rand '30, Willard W. Selden '30, Otto C. Kohler '31, Vincent P. Mango '31, Richard M. Cochrane '32, Charles K. Jones '32, Albert D. King '32, Arthur M. Marshall '32, Paul B. Samuelson '32, Theodore O. J. Kresser '34, Benjamin S. Malin '34, Leon Matzkin '34, Jim Eng '35, Robert A. Olsen '35, Laurence A. Stone '35, Daniel Pilistine '37, Francis P. Ford '38, Russell S. Omdahl '38, Frank T. Rudiak '38, Marshall P. Bearce '40, John Kapinos '40, and Cherry L. Emerson, Jr., '41. — JOHN G. WHEALE '38, *Secretary*, 95 State Street, Springfield, Mass.

Washington Society of the M.I.T.

Following the custom of the last two years, members of the Society, their families, and friends enjoyed our outstanding annual event, the June picnic, on the estate of Allen B. McDaniel '01 at Waterford, Va. Many newcomers shared our hospitality and fun, which lasted from 3:30 to 8:00 P.M. on June 21. We were indebted to Mr. and Mrs. Leroy Chamberlain for the use of their swimming pool, ball field, and tennis court.

The unusually hot day induced a large number to use the swimming pool. Some postponed this pleasure until after an energetic softball game, in which twenty picnickers indulged, led by Alan Fitch, son of John D. Fitch '24, and George D. Mock '28. Pierre Blouke '19 starred for the losers, and Anthony P. Mathesius '06 put on an outstanding performance as pitcher for George Mock's winning team.

At the suggestion of Henry D. Randall, Jr., '31 some hardy souls indulged in water polo after the ball game. Henry and his team proved too husky for any real opposition. — Through the courtesy of McDaniel and Chamberlain, arrangements were made for those who wanted to play golf on Saturday morning at Purcellville, near Waterford.

Delicious punch and cooling ice cream were served by the McDaniels. We all enjoyed Negro spiritual singing during the evening. The picnic committee headed by John D. Fitch deserves the greatest commendation for the manner in which they carried out the program.

The following Alumni and guests attended: Sanford E. Thompson '88; Mr. and Mrs. J. Earlston Thropp, Jr., '94; Mr. and Mrs. Joseph W. Clary '96; Mr. and Mrs. Nathan C. Grover '96; Mr. and Mrs. Charles H. Stratton '00 and John Sharf; Mr. and Mrs. Allen B. McDaniel '01; Mr. and Mrs. George E. Marsh '02; Amasa M. Holcombe '04 and Priscilla Holcombe; Mr. and Mrs. George H. Shaw '04 and Charlie Covell; Mr. and Mrs. George N. Wheat '04; Mr. and Mrs. Maurice E. Weaver '05; Anthony P. Mathesius '06; Mr. and Mrs. Frederick W. Amadon '07, F. W., Jr., Virginia Amadon, and Keith Fellows; Mr. and Mrs. A. E. Hanson '14 and Eleanor, Evelyn, and Elaine Hanson; Mr. and Mrs. Aubrey D. Beidelman '15 and Lolita C. Beidelman; William G. Brown '16; Pierre Blouke '19 and Mrs. Jessie Blouke; Lieutenant Commander and Mrs. Edward E. Saunders '19 and Ted, Gertrude, and Eugene Saunders; Lieutenant Colonel and Mrs. Wendell P. Sammett '20; Lawrence W. Conant '21 and Dorrit, William, George, and Peggy Conant; Kenneth Bernard '22 and Dorothy Bernard, Maud Greear, and A. H. Blackall; Mr. and Mrs. Ralph S. Hayes '22; and Mr. and Mrs. William K. MacMahon '22 and Donnie, Anne, and Hugh MacMahon and a guest.

Also present were: Mr. and Mrs. Paul J. Culhane '23; G. Donald Fife '24; Mr. and Mrs. John D. Fitch '24 and Alan and Douglass Fitch; Mr. and Mrs. Ralph Ilsley '25 and Robert Gilbert; Mr. and Mrs. Edward M. Lee '25; Harry B. Swett '25; Mr. and Mrs. George D. Mock '28; Ludwig C. Hoffmann '29 and family; Raymond W. Jones '29 and family; John A. Plugge '29 with James and John O. Plugge, Mrs. H. O. Plugge, and Mrs. Donald E. Lane; Perry H. Jacob '29 and family; Mr. and Mrs. Albert F. Bird '30; Mr. and Mrs. John A. Mathews '30; Mr. and Mrs. Mario V. Caputo '31; Mr. and Mrs. Freeman G. Corkum '31; Mr. and Mrs. Henry D. Randall, Jr., '31 and Mrs. D. R. Cramm; Mr. and Mrs. John Vasta '31 and Bruno Vasta; G. Arthur Lowery '32; Mr. and Mrs. Frederick M. Moss '32; Mr. and Mrs. John A. Robertson '32 and John, Jr.; Mr. and Mrs. Charles M. Thayer '32 and family; M. Elsa Gardner '33; Maxwell D. Millard '33; George B. Hunter, Jr., '37; Blake M. Loring '37; and Burton H. Tower. — AMASA M. HOLCOMBE '04, *Secretary*, 4817 Woodway Lane, Northwest, Washington, D.C. WILLIAM K. MACMAHON '22, *Review Secretary*, Rosslyn Gas Company, 3240 Wilson Boulevard, Arlington, Va.

S.P.E.E.

Thanks to Arthur L. Townsend '13, Associate Professor of Mechanical Engineering at the Institute, we learn that the M.I.T. alumni meeting held at the University of Michigan during the annual session of the Society for the Promotion of Engineering Education was attended by twenty-nine Alumni on Monday, June 23. Preliminary arrangements were made and greetings extended by Emerson W. Conlon '29, assistant professor of aeronautical engineering at Michigan.

Walter S. Rodman '09, dean of engineering at the University of Virginia, spoke on behalf of the M.I.T. Alumni in the South. Edwin S. Burdell '20, director of the Cooper Union, spoke for the Alumni in the North and described briefly M.I.T. Alumni relations in New York City and the new clubhouse. His talk was timely, for the S.P.E.E. meeting next year is to be held in New York City.

Professor Townsend, who presided at the meeting, talked briefly about the engineering defense training program and Technology's co-operation in this endeavor.

Thomas K. Sherwood '24, Associate Professor of Chemical Engineering, talked about the expansion of Technology's Department of Chemical Engineering with particular reference to the chemical engineering laboratory now under construction. A few brief remarks concerning the research program at the Institute were presented by Carlton E. Tucker '18, Professor of Electrical Engineering.

Other Alumni who attended were: Horace R. Thayer '98, now teaching at Pennsylvania State College; Joseph B. and Mrs. Finnegan '04, Illinois Institute of Technology; Henry W. Blackburn '08, Syracuse University; Chester L. Dawes '09, Harvard University; John A. Willard '09, consulting engineer, Boston and New York; John L. Bray '12, Purdue University; Harold W. Bibber '20, Ohio State University; Arthur H. Radasch '20, Cooper Union; Dugald C. Jackson, Jr., '21 and Mrs. Jackson, University of Notre Dame; Robert R. Worsencroft '21, University of Wisconsin; Edmund D. Ayres '22, Wisconsin; Joseph H. Keenan '22, M.I.T.; William J. Miller '22, University of Alabama; Richard H. Frazier '23, M.I.T.; Howard S. Gardner '30, University of Rochester; J. Howard Arnold '31, State University of Iowa; Harner Selvidge '32, Kansas State College of Agriculture and Applied Science; Edward W. Kimbark '33 and Mrs. Kimbark, Northwestern University; Edward W. Comings '34, University of Illinois; William J. Cope '37, Purdue; Robert York, Jr., '38, Carnegie Institute of Technology; and Douglas P. Adams and Howard R. Bartlett, staff, M.I.T.

CLASS NOTES

1873

The seventy-first annual meeting and reunion of the Class Association was held on June 7 at the Hotel Statler in Boston. All the members of the Association who are now alive were present — Henry P. Cogswell, William T. Leman, and George M. Tompson. After the meeting Leman entertained the members at luncheon.

William E. Brotherton died on May 21. — GEORGE W. TOMPSON, *Secretary*, 15 Pleasant Street, Wakefield, Mass.

1876

Charles R. Fletcher, III, died on September 10 in Los Angeles, Calif., where he had resided and had his office for more than thirty years. — CHARLES T. MAIN, *Secretary*, 201 Devonshire Street, Boston, Mass.

1877

Six members of the Class met at the Exchange Club, corner of Milk Street and

1877 Continued

Batterymarch, Boston, at half past one on June 6. Those present, in order of their positions at the table, were Charles A. Clarke, George W. Kittredge, Frank I. Sherman, Byron E. Higgins, William H. Beeching, and Belvin T. Williston. At each plate was a gift from President Clarke — a pencil that is luminous at the point.

Messages from the missing members were read. Clarke told about his factory's output of boring mills and the orders ahead. Practically all of the manufacture is for the United States Government. Sherman told us of his work at his home in Mansfield. Kittredge gave us a report on his raising of homing pigeons.

Higgins gave us a very interesting account of his following the sea in early life. He was born in Wellfleet, Mass., on October 1, 1853, the oldest of the seven children of Captain Noah S. and Abigail N. Higgins. At the age of eight Byron began to go to sea summers and to school winters. He became an able seaman at twelve. At eighteen he left the sea to learn his trade as a mason. Later he went into business for himself. He took the Course in Architecture at M.I.T. In 1929 illness forced him to retire.

Hibbard and Hallett had intended to be with us but were obliged to remain at home. Wood could not be with us because of his work for national defense. — A photograph of those present was taken, and copies were sent to members of the Class through the courtesy of Charles Clarke. — The meeting broke up at about three o'clock.

Two classmates have died since our last count was made, so now there are fifteen of us whose addresses are known.

Wallace Hackett, lawyer, died at his home in Annapolis, Md., on February 15, 1939. He was born on May 1, 1856, the son of William Henry and Mary Wells (Healey) Hackett. He was educated in the public and private schools of Portsmouth, N.H., and read law in the office of his grandfather. His ancestors had been very prominent in the legal profession, and it seemed proper that he should continue the family tradition.

Hackett attended the Institute from 1872 to 1874. In the first of these years he took the regular freshman program. No record is available, however, showing what he studied during his second year. Evidently he discovered the studies were not to his liking, for he went back to his law. He received the degree of LL.B. from Harvard Law School in 1879 and then began to practice in Portsmouth.

Hackett was city solicitor for three years, counsel for the United States in court on the *Alabama* claims, mayor of Portsmouth in 1907 and 1908, president of the Republican state committee in 1908, representative to the general court in 1909, member of the New Hampshire Historical Society, and president of the Alarick Memorial Association. He joined the Freemasons, Saint Andrew's Lodge No. 56, on November 2, 1872, and was master of this lodge from 1882 to 1883. — His favorite amusement, he said, was sawing wood.

Hackett married Abby Winchester, daughter of Mr. and Mrs. Ezra H. Winchester. A daughter, Marion, suffered from infantile paralysis. She married a naval officer, but your Secretary was unable to find anything further in regard to her.

Lucius Melvin Leach, son of Lucius and Celia (Howland) Leach was born in Brockton, Mass., on November 25, 1855. He died in his sleep at 56 Pleasant Street, Bridgewater, Mass., on last February 3. Before going to the Institute, he attended the schools in Brockton. Leach married Nellie Hayward, daughter of Nathan and Caroline (Andrews) Hayward. Carleton Lucius Leach was born to them on August 3, 1880, in Brockton. On May 21, 1912, Carleton married Hazel Lewis of Augusta, Maine. They have one daughter, Virginia, born on January 1, 1914, who married Henry T. Stanwick of Brockton on June 25, 1939, and they in turn have a daughter, Virginia, born on April 9, 1940.

Our classmate, Lucius, had a daughter, Lila Hayward Leach, who was born on May 10, 1888. She married Arthur Lincoln Packard on May 3, 1911, and they have two children, Richard Melvin, born on April 12, 1919, and Caroline Andrews Packard, born on April 5, 1913, who married Bernard Hall Eldridge of Middleboro, Mass.

For several years Mr. Leach was associated in business with his father, a pioneer shoe manufacturer in Brockton. In 1893 he moved to Bridgewater. He was a member of the Paul Revere Lodge of Freemasons, Satucket Royal Arch Chapter, and the Bay State Commandery Knights Templars.

Lucius had a brother, Robert, of Fairview, Conn., and a sister, Celia, of New York. He attended the First Unitarian Church of Bridgewater. — BELVIN T. WILLISTON, *Secretary*, 3 Monmouth Street, Somerville, Mass.

1885

A portrait of Everett Morss was presented to the Institute on Alumni Day, June 9. — The annual class luncheon was held on June 14 at the University Club in Boston. Some who usually attend our class affairs had previous engagements, so the attendance was small. However, Fiske, Hunt, Packard, Parsons, Pratt, Rawson, and Wallis were present. — We drank the usual toast to our departed classmates and to the living who were absent. — Greetings were received from several classmates, and Mrs. Charles A. Brown sent us a gracious written message and some flowers.

Frank Henry Cutter died on August 6 at his home in Inglewood, Calif. His health had not been good for some time, but he was confined to his bed for only a week before his death.

After leaving Technology, Cutter was with the Boston and Albany Railroad until about 1886, when he went to Cheyenne, Wyo., to work for the Electric Light and Power Company until 1900. About that date he moved to Corning, Calif., and engaged in horticultural pursuits for twenty-four years. He then moved to Inglewood.

In our Institute days, Baker, Cutter, Du Pont, and W. D. Fuller comprised the tug-of-war team, and they acquitted themselves with honor. — Although your Secretary had not seen Cutter in all these years, we had had some correspondence of late, and Frank had been diligent in trying to locate some of the '85 men about whom I was seeking information.

One of our classmates about whom we had no information was Harry Huntington. In May the Secretary received a letter from Mrs. Huntington, from which he quotes: "Harry Huntington, of whom you ask, was called Harry among his friends though his rightful name was Harwood. This is no doubt the reason you were unable to get any information about him. He died in Los Angeles on January 4, 1923. He attended Technology only one year, returning to Trinity College in Hartford, whence he was graduated with honors and the first prize in chemistry.

"He taught chemistry at Harvard College for a year. He studied in Germany and Alsace-Lorraine for two years, and at the school of mines, Columbia University, in 1893 and 1894. During summer vacations he studied at Oxford, England.

"The degree of Ph.D. was awarded him from Columbia, where he majored in chemistry and minored in law. He was admitted to the bar of Connecticut in 1895, and practiced chemical jurisprudence in New York City two days a week, and in Washington two days. He held the office of assistant appraiser at the port of New York from 1901 to 1904.

"Later Harry studied for the ministry, first at the Union Theological Seminary and then at the General Theological Seminary in New York. He was ordained a priest in the Episcopal Church, and in 1915 was rector of St. Luke's Episcopal Church.

"Afterward he went to Los Angeles, where he became interested in making moving pictures of the Old Testament. This was a large undertaking. He traveled in all parts of the world, making the missions of the Orient a special study.

"Harry was the author of *Some Notes on Chemical Jurisprudence*, *Year Book for Colorists and Dyers*, *Cui Bono?*, and many contributions to newspapers and magazines. He was a life member of the American Chemical Society, Inc., and a member of the General Society of Colonial Wars, Society of Mayflower Descendants, Alpha Delta Phi, University Club in New York City, Union League and Lotos clubs of New York City, and the California and Los Angeles country clubs." — ARTHUR K. HUNT, *Secretary*, 145 Longwood Avenue, Brookline, Mass.

1887

The annual class dinner was held as usual at the Parker House, Boston, on June 8, with the following eleven members present: Taintor, President; Cole, Vice-President; Very, Secretary; and Blake, Cameron, Carter, Curtis, Cushing, Kendall, W. R. Thomas, and Tripp. The

1887 Continued

principal business transacted was the election of Vice-President Cole to the added office of class treasurer to succeed our late beloved classmate Benjamin C. Lane, to whose memory a grateful tribute was accorded. Letters were received from Barton, Green, Schmidt, Shepard, Wilcox, and others, expressing their regrets at being unable to attend, but holding out the hope of being present at our fifty-fifth reunion, which in all probability will be held next June at Marblehead, as in 1937. Since the 1940 annual dinner, the Class has suffered the loss of nine more of our members: Dwight Brainerd, William H. Brainerd, William B. Douglas, Jarvis Hunt, Ben Lane, Edward Lovering, Frank A. Merrill, Leandro T. Safford, and Harry F. Totman.

That the name of your Secretary is missing from the above necrology is due to a kind Providence which spared the lives of himself and the members of his family when the summer cottage in which they were gathered was struck by lightning on the afternoon of Sunday, June 29. The cottage was damaged to the extent of several hundred dollars, but the persons inside escaped unscathed. It was an experience never to be forgotten. We shall soon have to think about making arrangements for the reunion next June, and suggestions regarding the selection of the location will be welcomed by the committee. Let us have your ideas about it. — NATHANIEL T. VERY, *Secretary*, 15 Dearborn Street, Salem, Mass.

1888

"Life begins at seventy-five, and I count on another fifteen years at least." So writes our classmate Everitt Taylor of South Orange, N.J. He adds: "My fond dream of the past year of seeing my classmates again at our Webster dinner in June was smashed, for early in May I was run down by a truck. My car turned upside down, a total wreck, and, while I miraculously escaped with only bruises and a small cut on the hand, still I found that getting over the shock takes more time than I had realized. One of my friends tells me that such a jolt takes more out of a 'creative artist than of a washwoman or a hod carrier.'" On June 16, Everitt wrote: "I'm about back to normal and am now driving my new car, which takes the place of the old one which was smashed to smithereens. . . ."

Our fifty-third anniversary of graduation and fifty-seventh class dinner was held at Ned Webster's Chestnut Hill estate on June 8. Thirty-seven replied to the invitation, nineteen accepting. At the last moment three of these were prevented from coming, however, so that only sixteen had the pleasure of sitting around the festive board in Ned's regal dining room. Automobile accidents prevented two from being there.

The other accident happened to Henry Bates, who said in his letter of May 31: "I regret more than I can say being unable to go to our class dinner. I have spent twenty-four weeks in the hospital with a badly broken right leg, the result of disputing the right of way with an auto. My leg is in a brace, and I have to use crutches. I cannot yet negotiate steps of any kind or get into a car without being lifted bodily. Another year I hope to be in shape to join the Class."

William Besler, from his home at 917 West Seventh Street, Plainfield, N.J., wrote: "A year ago the last of June, I went to bed as usual, but in the morning Mrs. Besler was unable to waken me, and I remained unconscious for an entire month. A burst artery caused the trouble, and for six months I stayed in bed or on the lounge a greater part of the time. Although I have not been able to take an active part in business this last year, my sons have made up for my deficiencies by selling high-pressure steam Besler boilers. They have had several orders for them to be used in new naval vessels, as well as private orders. I remained at home quietly during the excessive heat, taking things easy. I regret more than these words can convey that I was unable to be present at the annual dinner party at Ned Webster's, but if I continue to improve as at present I shall attend the reunion next June.

Ivar Sjöström wrote on June 7: "On Thursday, June 5, I had a cold come on very suddenly, and my doctor advised me that if I went out on Sunday (the day of the Webster dinner) there would be grave danger of pneumonia."

On May 22, Ted Foque wrote: "Am I fit to be tied! After I had plans all completed for what promised to be a wonderful trip east with Mrs. Foque, early in June, the long-drawn-out effects of a touch of flu, to which I had not given up, finally ran me out of gas, and a complete rest was ordered. The rest is working fine, but it means no trip, so I cannot be with you on June 8. I wish that you would do one thing for me. When the butler comes around with those tasty cocktails, grab the one intended for me and give it to Fred Ellis. If he can still handle one, have him drink it as a toast from me to the Class of '88." Later Ted wrote: "I seem to be coming along in good shape. I think the doctor is over cautious, but I am carrying out his orders not to row a boat, run any races, and so on. Did they make you give up golf? I hope not." The Secretary still plays a little golf; he couldn't give it up suddenly after thirty-four years, but he does not play fifty-four holes a day as he used to. Foque also enclosed a check for the flower fund.

Henry Eastman, our grand old man, eighty years young, relative of Daniel Webster, and inventor extraordinary, was unable to be present, but his inseparable chum of fifty-seven years gave a unique demonstration of how Henry operates his semi-automatic stoker.

While the crowd was arriving, a Western Union Telegraph messenger rushed up on a bicycle with the following message for President Webster (thirty-two cents collect): "Will join '88 tonight; regret my carelessness." Signed, Frank O. Stetson. This message threw the Class into slithers of excitement, for a few years ago Stetson arrived just one week after the dinner was over. This time, however, he did not arrive *at all!* Stetson always did do the unexpected. Ask Conner if you doubt it.

Bert Mead accepted the invitation and then telephoned just before the dinner that he was "not equal to it." — George D. Moore, retired Brigadier General of the United States Army, wrote from San Diego, Calif.: ". . . Distance . . . also precluded my attendance at the fiftieth anniversary of my class of '90 at the United States Military Academy at West Point last year. My wanderings have included duty on the Mexican border, in Hawaii, at the Philippine insurrection, two trips to the Orient, and the two European Wars. I hope there will be no mix-ups for us across the two oceans, but things do not look cheerful as yet."

Gene Daniell has moved back to his old home at Three Rivers Point, Franklin, N.H., and could not come. — Donald W. Blair, Captain of the M.I.T. Company B corps of cadets in 1884, sent his regrets, but a committee headed by John Cavanagh guarantee Blair's presence next June. — Ulie Holman is a good scout and missionary. The day after Alumni Day he called on Charles Knapp and Donald Blair and reported: "Charles Henry Knapp, who went to Technology one year, is now with the stock-exchange house of Elmer H. Bright and Company, 84 State Street. Donald Blair, who works at 77 Summer Street, Boston, looked the way he did back in 1884 and 1885. Both were glad to see me, though we hadn't met for fifty-six years. Each promised to come to our class dinner next June." — Eddie Fuller of 18 Brattle Street, Worcester, Mass., replied to the dinner invitation: "I have been in the hospital for some time, but am home now. I'm sorry to be unable to attend."

Faxon's daughter occupied the old Collins house at Chebeague Island this summer, as the Secretary moved to The Farm, ten acres with a thousand-foot frontage on Casco Bay, two bathing beaches, buildings 121 years old but revamped to look better than new.

Ellis and his son-in-law offered to take Eastman to the dinner this year as they did last, but Henry would not allow them to make the long trip to Westford and back to Melrose after eleven o'clock, as they did last year.

Ralph Sweetland would have liked to meet the "sixteen faithful" at Ned Webster's on June 8. — Deacon Smith of North Hampton, N.H., said: "I wish your summer home was a little nearer, so that I might call and see you once in a while." — Howland Shaw Chandler, 1427 Great Plain Avenue, Needham, sent in a contribution to our flower fund. This is the first time the Secretary has had the pleasure of hearing from Chandler in fifty-six years. We hope to see him face to face next June.

John Runkle has sent the Secretary so much interesting information about his very active life and his years at Harvard, whence he was graduated in the class of 1906, that it will have to be held over till

1888 Continued

the December issue because of lack of space. — Fred Safford said: "I have not forgotten the thrills of our fiftieth reunion, and I regret our thinning ranks."

President Webster wrote: "I hope all the members of the Class enjoyed the dinner as much as I did. I enclose the newspaper picture taken by the *Herald*. I thought you might like it for your files. Best wishes for a pleasant wedding party." — (The wedding of the Secretary's niece at The Farm on June 21 was a very happy affair, with twenty-one relatives and thirty other friends present. An uncle came from Hollywood and an aunt from Pasadena, Calif. The ceremony was performed out of doors in front of the farmhouse, facing the bay and the White Mountains.)

Those present at the Webster class dinner were Atkinson, Bird, Bridges, Buttolph, Cavanagh, Collins, Conner, Ellis, Faunce, Faxon, Hamblet, Holman, Linzee, Reynolds, Runkle, and Webster. — Regrets were received from Bates, Besler, Blair, Daniell, Dearborn, Eastman, Foque, Fuller, Mead, Merrell, E. B. Moore, Nickerson, D. H. Perkins, Pool, Redd, Sjöström, E. M. Smith, R. B. Smith, Stevens, Sweetland, Taylor, Thompson, and Wheeler. Those present at the Alumni Dinner were Bird, Conner, Ellis, Hamblet, Holman, Runkle, and Webster.

The response to the Treasurer's hint that the class funds were low was prompt and generous, and we now have enough money for a long time to come.

Frank Ashburton Moore, who was president of Frank A. Moore, architects, 607 Fifth Avenue, New York City, until his retirement twelve years ago, died at his home on Swamp Road, Huntington, Long Island, on August 2. He was born in Worcester, Mass., the son of Jesse and Frances Milcher Moore. He was graduated with us in '88 and entered the offices of Richard M. Hunt, a New York architect. Moore was a former officer of the American Institute of Architects, a former vice-president of the Larchmont National Bank and Trust Company, and a member of the University Club in New York and of the United States Senior Golf Association. He was the best golfer in the Class, as proved by his winning of the Class golf tournaments at our forty-fifth and fiftieth reunions.

Surviving Moore are two brothers, Edward H. and George D., both of Worcester, and two sisters, Miss Jessie L. Moore of Worcester and Mrs. Eliot White of Roselle, N.J. Frank will be missed, as he was always present at class dinners and reunions and took a great interest in class affairs.

Francis Laurens Vinton Hoppin, a colonel in the United States Army and a retired architect of New York and Newport, R.I., died at his Newport residence, Auton House, on September 9. He was a descendant of an old Rhode Island family and had been a prominent member of the summer colony at Newport for many years.

Hoppin was born in Providence, R.I., a son of Washington Hoppin and the former Louise Claire Vinson of Boston. He attended the Trinity Military Institute with the intention of making the Army his career. He turned to architecture, however, and after studying at Brown University and the M.I.T., spent two years in further preparation in Paris. On his return to this country, he worked for a time in the office of McKim, Mead and White in New York before engaging in independent practice.

A painter as well as an architect, Hoppin gave one-man shows of his water colors in New York in 1925 and 1929. His pictures were largely painted on visits to Soissons, Reims, Arras, Ypres, Rome, Paris, Newport, and Bar Harbor.

A veteran of the war with Spain, Colonel Hoppin served for many years in the twelfth regiment of the New York National Guard. He reached the rank of major in the twelfth and at one time was adjutant general of the first brigade, N.Y.N.G.

Colonel Hoppin's clubs included the Union and the Piping Rock, and he was also a member of the Military Order of Foreign Wars, Sons of the Revolution, Holland Masonic Lodge, and the Pilgrims of the United States. He leaves a widow, the former Frances L. Gurnee, who is president of the Newport Garden Club.

As you will note, the Secretary's winter address is 39 Wiggins Street, not 57 as before. — BERTRAND R. T. COLLINS, *Secretary*, 39 Wiggins Street, Princeton, N.J. SANFORD E. THOMPSON, *Assistant Secretary*, Thompson and Lichtner Company, Inc., 620 Newbury Street, Boston, Mass.

1890

William Z. Ripley died at his summer home in Maine on August 16. He had been in poor health since a serious automobile accident in New York about 1928. We of '90 remember him as captain of Company A in our freshman year and as one who took an active part in class affairs and demonstrated his original thinking even in our class gatherings. His postgraduate work was taken at Columbia University, where he received his master's and doctor's degrees in 1892 and 1893. Subsequently he received honorary degrees from Columbia, the University of Wisconsin, Bucknell University, and the University of Rochester. Though he took the Course in Civil Engineering, he had from the beginning devoted himself to railroad economics, and from 1893 to 1902 he taught economics at the Institute. During these early days he also was lecturer in sociology at Columbia from 1893 to 1901, and he became a specialist in the field of anthropology, publishing in 1900 *The Races of Europe*. He was a corresponding member of the Society of Anthropology in Paris, in Rome, and in Cherbourg.

He left Technology to become professor of political economy at Harvard. Then came his first job in a public capacity — counsel to the United States Industrial Commission, where many of his recommendations later became laws. Before 1914 he had published books on *Trusts, Pools and Corporations; Railway Problems; Railroads — Rates and Regulations;* and *Railroads — Finance and Organization*. During the war he was administrator of labor standards for the War Department, and following that he was chairman of the National adjustment commission of the United States Shipping Board. During this period he was successful in averting many serious strikes. From 1920 to 1923 he served on the Interstate Commerce Commission as a special examiner on consolidation of railroads.

The Boston *Globe*, speaking of his many contributions to the literature of economics, stated: "Professor Ripley had the happy faculty of dealing with the driest of subjects in a way that intrigued the layman. With deep perception and shrewd reasoning he applied the formulae of economics to the facts of the community. The consequence was that his utterances brought sharp reactions from financiers and representatives of large corporate interests. His thesis proved that the small shareholder's money was being used to secure fortunes for others by the pyramiding of stocks, while the helpless stockholder was purposely being kept in total ignorance of what was going on."

An editorial in the Boston *Herald* spoke of Ripley's book of 1927 — *Main Street and Wall Street*, its thesis "that America was riding for a fall," and the storm that it raised. The editorial said: "After 1929 he never adopted an 'I told you so' attitude, but he was heard with respect in many circles that had derided him. More than one President consulted him. Many committees heard him." Continuing, the editorial discussed his plan for the consolidation of the railroads and its adoption by the Commission, how he "qualified as a fair and competent authority, played no favorites and eschewed all politics. He saw a long way ahead. He was no muckraker; his purposes were always constructive." — Ripley is survived by his wife and two sons.

William L. Murdock, who was with us from 1886 to 1887, died at his home in Bass River, Mass., on July 22. His address on the Secretary's books has swung back and forth between Michigan and Boston. He started work with the Middlesex Tanning Company at Woburn, Mass., but in 1900 joined the Northwestern Leather Company and went to Sault Ste. Marie, Mich., to build a large plant there. He continued with this company first as manager, then as vice-president until his death. From the *Soo-Tan-Ner* we learn that he was "an outstanding authority in the leather industry." Murdock was also a vice-president of the Boston Leather Benevolent Society and a director of several enterprises. He is survived by his wife and two grandchildren.

Charles R. Nason, who in 1937 celebrated his fiftieth anniversary with the actuarial department of the Aetna Life Insurance Company, died on March 1 in Hartford, Conn. The Hartford *Times* said: "He was a member of the Technology Club of Hartford and a charter member of the City Club. The City of

1890 Continued

Hartford has lost a fine citizen, and the South Congregational Church, of which he was Treasurer for twenty-five years, a loyal member and a most devoted servant. He gave to the city a type of character of which our city may well be proud. He was faithful in all forms of delegated trust."

On Alumni Day in June, twelve members appeared: Atwood, Batchelder, A. F. Brown, Burley, Crane, Goodwin, Greenlaw, Miss Howe, Packard, Roots, Sherman, and Tilson. It was a pleasure to greet Brown, as this was his first appearance at a class reunion for many years. There was some discussion as to where and how we should celebrate our fifty-fifth reunion.

The preliminary report of the Alumni Fund shows '90 again well up toward the head of the list, being third in percentage of quota contributed. Seven classes are ahead of us in percentage of numbers contributing, however, so there is still opportunity for improvement.

Goodwin and Mrs. Goodwin spent the summer in New Mexico, riding horseback and climbing mountains. Harry reports he has come back full of pep and will again this year give his lectures at the Institute.

"Charles Henry Alden, 73, is an architect who has practiced in Seattle since 1909, designed many of the city's distinguished buildings and homes. A bachelor, he lives at the University Club, takes special pride in its library which he founded, assembled and decorated." This is the caption of a picture in the story of the Alden family, descendants of John and Priscilla, appearing in *Life* of September 8. Seated by a globe, and with an open atlas before him, he looks hale and hearty but has a lot more white hair than he had the last time we saw him.

At a recent M.I.T. Women's Association exhibition, Miss Howe exhibited photographs of some of her architectural work.

The Secretary has added to his list of members the name of Ernest C. Cougar, whose address is now Box 145, Olive, Calif. The notice was received from the Register of Former Students. — GEORGE A. PACKARD, *Secretary*, 50 Congress Street, Boston, Mass. HARRY M. GOODWIN, *Assistant Secretary*, Room 4-242, M.I.T., Cambridge, Mass.

1891

Although this is not our regular month for class notes, we thought it desirable to get on the records some account of our fiftieth reunion, a most happy occasion for all who attended.

First, however, we express our deep regret for the death of Jere Campbell, whom we had not seen for some time but whom we all liked. The following notice appeared in a Boston paper on September 6: "Col. Jeremiah Campbell, 72, retired manager of the Salem Terminal Company, North Shore coal distributing agency, died . . . after a short illness. He lived at Winter Harbor.

"Born in Chelsea, he lived in this city many years, and was active in civic affairs. . . . He served in the army ordnance branch during the world war, and was decorated by the government of France for meritorious service. He was a member of the Engineers Club, Algonquin Club, and was a charter member of the Boston Athletic Association. He was also a member of the Salem American legion post. He leaves his widow, a son, Richard, of Fitchburg; a daughter, Mrs. Harry Cole of Ipswich, a stepson, Carlysle Reed of Salem, and a sister, Mrs. Alice Bossom of Boston."

The following is a condensed account of our jubilee. The full account will be published in our fiftieth anniversary class book. Work for the proper celebration of our fiftieth anniversary and reunion began in the summer of 1940. By fall of that year Harry Young had been made general chairman and various committees had been appointed. The first important problem to be solved was location, and the addition to the New Ocean House, Swampscott, Mass., was reserved for our use. It was felt that a location near Boston was advisable and would tend to increase the attendance. The selection of the New Ocean House proved admirable because of its fine location, good rooms and food.

A ladies committee was appointed with Mrs. Gorham Dana as chairman, and the ladies were invited to attend the luncheon at the Algonquin Club on Friday and the Alumni Day luncheon on Monday. Eleven attended the former and seven others the latter.

Sunshine was with us throughout the five days. The first three days left nothing to be desired, but a near gale on Monday made the outdoor luncheon and the Class Day exercises somewhat difficult, especially for the ladies. Awnings, tablecloths, and food tried to blow away, but they were duly mastered by our technical experience.

Our celebration started on Friday with a buffet luncheon at the Algonquin Club. Twenty-one members attended. It was a treat to see several who have not been with us for a long time: Atkinson, Bunker, Hanington, Kimball, Leland, A. W. Pierce, and Ricker, four of whom traveled from 1,500 to 3,000 miles.

Thirty-seven others are on the honor roll of those who attended some of our many festivities: Barnes, Bird, Bowen, Bradlee, Brown, Capen, Clark, Cole, Damon, Dana, Earl, Ensworth, Fiske, Forbes, Gottlieb, Hatch, Holmes, Howard, Mansfield, Moore, A. R. Pierce, Punchard, Read, Ryder, A. C. Smith, E. C. Smith, Spooner, Swan, Tappan, Wait, Walker, Warren, J. J. Welch, T. S. Welch, Wilder, Wilson, and Young.

When we arrived at the New Ocean House we found that all our wants had been taken care of by Lin Damon. The rooms were assigned, and the get-together was well under way. Dana had his "Old Curiosity Shop" in full swing shortly after our arrival, and the study of these antiques, scrapbooks, and so on was most interesting. About sixty single photographs of classmates, taken while we were at the Institute, were hung up, numbered, and a contest was on to see who could correctly name the most. George Spooner was the winner.

Our dinner Friday night was wholly informal; we never were much on speeches. After dinner Gorham Dana took charge of the movies as usual, and he showed us how we looked five and ten years ago. A number of letters and telegrams were read from those who were unable to be present.

On Saturday a boat ride was in order, so about thirty of us drove to the Corinthian Yacht Club, where the boat chartered for us by Harry Young took us sailing for an hour and a half around Marblehead Harbor and up the coast off Magnolia. We made a brief stop at the clubhouse for refreshments on our return and then went back to the hotel where we were greeted by Barney in his wheel chair.

After lunch, more get-together, more study of the collection of antiques — and the golf match. The announcement had been made that nine holes would be played on the hotel golf course (longest hole one hundred and fifty yards, shortest fifty yards) and that three prizes would be awarded — gross, booby, kickers — with Howard Forbes in charge. Because of persuasive efforts of the Class President and Secretary, Young and Ensworth agreed to join them, making four in all. A weird game followed; the scores have been destroyed.

After the group picture at 4:30 P.M. we began to get ready for the all-important banquet. Our guests arrived about six. It was indeed a treat to have both Dr. and Mrs. Compton attend our banquet. They had to leave after the dinner was over to join their party at Technology night at Pops, but there was time for a few gracious words from Karl, which we appreciated. Horace Ford, Treasurer of the Institute, was also a guest. He showed us some colored movies of the new Technology buildings. Harry Clifford '86, another guest, was an instructor when we were in school. In all, forty classmates and six guests were present.

Following a few reminiscences by Harry Clifford and the pictures and talk by Horace Ford, we were shown a movie of scenery and animal life in Colorado. The film was brought in by Charlie Hanington, who is president of the Colorado Museum of Natural History in Denver. This movie proved to be very enjoyable. Many stayed for lunch Sunday and left in the afternoon.

Monday was Alumni Day and Class Day. A buffet luncheon was served in Du Pont Court. We and our wives were invited to sit at a long table with President and Mrs. Compton as hosts. We were waited on, as befitted our age and standing, while all the others had to wait on themselves. It was a beautiful day except for the wind which, according to the papers, was blowing forty miles an hour. It blew in gusts and threatened to disrupt the party.

In the afternoon a few of the faithful, including some of the ladies, went to the Class Day exercises in Lowell Court, presumably for the express purpose of hearing Henry Fiske give his talk to the Class of 1941. Near the beginning of his talk

1891 Continued

he referred to the questionnaires sent out, and he stated that at least fifteen of the living members of his Class sent sons to M.I.T. Howard Forbes and Frank Howard sent two each, and Frank Howard had two grandsons in the Class of '41. They were asked to rise and were given much applause.

The Alumni Banquet was held on Monday evening at the Hotel Statler. Thirty-three were present, a fine representation after four days of a rather strenuous life.

Twenty-nine of us managed to show up at the graduation exercises in Symphony Hall, put on cap and gown, and sit on the platform. That so many of us did that is a remarkable achievement and proves that our youthful training made us men who could take it and come up smiling.

Ninety-One, Ninety-One, Rah! Technology! Ninety-One! — HENRY A. FISKE, *Secretary*, Grinnell Company, Inc., 260 West Exchange Street, Providence, R.I. BARNARD CAPEN, *Assistant Secretary*, 364 Union Avenue, Framingham, Mass.

1892

On June 7, at the annual meeting of the Class, William R. Kales, President, presented the resignation of John W. Hall from the office of secretary-treasurer. This news was received with much regret. Because of Hall's reluctance to continue, however, the resignation was accepted. A rising vote of thanks and appreciation was given to Hall for his faithful services during past years. Charles F. Park was elected to fill the position.

President Kales suggested that it would be wise to have a permanent vice-president, and W. Spencer Hutchinson was nominated and elected to this office. A motion was also passed that a committee be constituted with full powers to act for our fiftieth anniversary. This committee consists of President Kales, Vice-President Hutchinson, Secretary Park, and others to be chosen by these men.

Watch for future class news and await a communication from your new Secretary. — CHARLES F. PARK, *Secretary*, Room 5-111, M.I.T., Cambridge, Mass.

1893

Ten members of the Class met for dinner and an informal get-together at the Technology Club of New York on the evening of June 9. Jim Emery instigated the affair, the ostensible purpose being to meet the Class Secretary, who was in New York on one of his weekly visits from Boston. In reality, no excuse was necessary for bringing together the New York crowd. Those who came on short notice included Charlie Allen, Howard Barton, Grosvenor Blood, Jim Emery, Fred Fay, Harry Latey, Fred Lord, F. F. Skinner, John Solomon, and Will Whiston. Regrets were wired from Charles F. Morse from his home at Patchogue, N.Y. Sam Dodge at Suffern, N.Y., wrote of his inability to attend. Arthur Farwell, absent for a month in Connecticut, wrote: "It's too bad, isn't it, that there cannot be at least one musical composer there to take the rough edge off engineering." He sent his regards to all from "the black sheep of the Class."

A few days after the dinner Dan Jackson wrote: "I am sorry not to have been with you all. . . . I am at my country home, Mattituck, Long Island, recovering slowly from a major operation." Just twelve weeks after the meeting, on September 1, Dan Jackson passed away.

From Rigby Wason in war-torn England the following letter, written on May 23, was received in New York last June by John I. Solomon, 121 West 87th Street, who has kindly forwarded it for the enlightenment of the Class: ". . . Here, all is well with me and mine. Rigby, Jr., is at the Schoolhouse, Rugby (my old house), and Prudence and Michael are both at boarding schools; all three are growing apace and are coming on well. I'm a member of the local post of the Observer Corps, now *Royal* Observer Corps, and do four or five duties a week. It's been mighty cold sometimes, but very useful work — and interesting, too. I'll have lots to tell you when you come across — as come you will — to see dear old London once more. Number 57 Onslow Garden still stands, but if it goes, no matter. I've done without it, and all that's in it, for nigh on two years now, so can continue to get along without it. . . ."

When Walter H. Norris of Portland, Maine, bridge engineer of the Maine Central Railroad since 1909, retired from active service last April, he had completed almost a half-century of railroading. A letter from Edward S. French, president of the Boston and Maine and the Maine Central railroads, conveyed recognition of Walter's long and faithful service, and a framed testimonial and a radio given him on his final day at the railroad offices in Portland were tokens of the esteem of his colleagues. The testimonial, "A Tribute to Walter Henry Norris, the Engineer, the Railroader, the Gentleman," was unusual evidence of the respect and affection in which he is held by his associates. It is the sort of tribute usually withheld until a man's death. Fortunately, in this case the eulogy came during Walter's lifetime, crowning his career, and at a time when he can look forward to many years of leisure and enjoyment and the pursuit of his hobby of gardening.

The Class had scarcely bid good-by to Technology at the graduation exercises in Huntington Hall in Old Rogers on May 30, 1893, when Walter Norris went to work in the bridge department of the Boston and Maine Railroad. Previously, during summer vacations in 1890 and 1891, he had worked on the St. Johnsbury and Lake Champlain Railroad. In 1910 he was transferred to Portland and became bridge engineer of the Maine Central, succeeding Benjamin W. Guppy '89. Portland has been Walter's home ever since. In his thirty-one years of service on the Maine Central he has built a considerable number of important railroad bridges, one of which, that across the Sheepscot River at Wiscasset, had among its several spans one which was the longest that had been built in New England up to that time. In recognition of his standing as a bridge engineer, Carl Milliken, then Governor, appointed Walter to represent Maine on the interstate board for the building of the Portsmouth Memorial Bridge. This highway bridge between Portsmouth, N.H., and Kittery, Maine, was built by the states of Maine and New Hampshire and by the Federal Government. It is reported that Norris was largely responsible for the selection of the vertical lift type of draw span for the structure.

The marriage of Jule Trelease, daughter of Mr. and Mrs. Frank Johnson Trelease of Upper Montclair, N.J., to James Albert Emery, Jr., was celebrated at the Presbyterian Church in Upper Montclair on Saturday evening, June 14. James, Jr., is the only son of our classmate Jim Emery, vice-president of Ford, Bacon and Davis, Inc., 39 Broadway, New York City. For many years the Emerys have made their home at Montclair. James, Jr., following in his father's footsteps, went to Technology and was graduated in 1938 in Civil Engineering. He is assistant to the engineering secretary of the American Transit Association, 292 Madison Avenue, New York City.

During August, Jim Emery made a short trip to New England and, as the star reporter who turns in more class news than any other member, he informed the Secretary of his class contacts. It was he who supplied the facts in this issue concerning Walter Norris, and he who sent for the Class files a photostat copy of the remarkable testimonial presented Norris on his retirement from railroad service. In his letter Emery says: "I also called on W. A. Clapp who is now living at 224 Union Street, South Weymouth, Mass. He looks remarkably like he used to, except that his little mustache is white instead of black. He is the same sweet-tempered, modest, and cheerful chap that he always was, and I found that both he and Mrs. Clapp were still as interested as ever in Institute affairs and old friends. Both Norris and Clapp are looking forward to our fiftieth reunion." — Emery has just been elected president of the Montclair Society of Engineers, a live organization of 450 members which emphasizes the human side more than the technical side of engineering.

Daniel Dana Jackson, head of the department of chemical engineering at Columbia University since 1918 until his retirement in 1939, and an authority on water supply and sanitation problems, died at his summer home at Mattituck, Long Island, on September 1. He was seventy-one years old. Professor Jackson leaves a widow, the former Ella Howard Phillips of Brooklyn, whom he married in 1902, and two children, Daniel Dana, Jr., and Elizabeth Purdy Jackson. His home in New York was at 10 Park Avenue.

Born at Gloucester, Mass., on August 1, 1870, the son of Daniel and Lucy Agnes Jackson, Dan was a regular four-year student with the Class, graduating in

1893 Continued

Chemistry. Immediately after his graduation he started work as a chemist in the Boston Water Works. Two years later he went to work as a biologist for the Massachusetts State Board of Health. Meanwhile he had attended Harvard Graduate School and was a lecturer at M.I.T. In 1908 he received a master of science degree from New York University, and in 1924 he was awarded the honorary degree of doctor of science by the University of Pittsburgh.

In 1897 Jackson went to Brooklyn, N.Y., as chief chemist of the Brooklyn Water Supply Department and was retained in that position until 1904, when he was appointed director of laboratories for the New York City Department of Water Supply, Gas and Electricity. He held that post until 1912. In 1911 he began giving lectures at Columbia on sanitary engineering and bacteriology and two years later was named assistant professor of chemical engineering, becoming associate professor in 1917 and head of the department a year later. Professionally, Jackson served as consultant to some of our larger cities on matters of water supply and sanitation and as consulting chemical engineer for industrial companies. In the commercial field, he was vice-president of the Leavitt-Jackson Engineering Company from 1912 to 1920 and technical manager of the Permutit Company from 1912 to 1917. He also had been a director of the Chemical Treatment Company. He was the author of numerous articles pertaining to his technical field.

During the first World War, Jackson gave notable technical service to the country. He was a member of the advisory committee on training camps, member of the committee on water supply of the Council of National Defense, dean of the school of military photography of the Signal Corps, professor in the school of explosives of the Ordnance Department, and, by appointment of the Secretary of War, a member of a special committee of three delegated to visit and report on war camps. He was cited for conspicuous civilian service.

Jackson was a fellow of the American Association for the Advancement of Science, the American Public Health Association, and the Society of American Bacteriologists. He was a councilor of the American Chemical Society and of the international Society of Chemical Industry. He became president of the American section of the latter society in 1932. He was a member of the American Institute of Chemical Engineers, the American Microscopic Society, the American Water Works Association, the Society for the Promotion of Engineering Education, the American Institute of Social Science, the Cincinnati Society of Massachusetts, the Society of Colonial Wars, and the Sons of the American Revolution.

Robert Duncan Reynolds died on July 2 after a long illness. Bobbie Reynolds, as he was affectionately known to the Class, was one of our most loyal and constant attendants at Technology functions. Son of Frank W. and Cordelia Reynolds of Boston, Bob joined the Class as a freshman and took the Course in Mechanical Engineering. On leaving the Institute he joined the B. F. Sturtevant Company, with which he remained until his retirement fifteen years ago. For the past twenty years Reynolds had served as head usher at Trinity Church, Boston. Throughout his life he had been actively interested in Trinity Church, beginning as a boy usher in the pastorate of Phillips Brooks. In later years he had served as a member of the vestry, the Trinity Club, Ushers Club, and the Trinity Neighborhood House, East Boston, of which he was a director. He was a prominent layman in the Episcopal diocese and served on the board of the Wellesley conference for church work. He was a life member and former secretary-treasurer of the Footlight Club of Jamaica Plain. Through his father he succeeded to hereditary life membership in the Military Order of the Loyal Legion of the United States. He leaves his widow, the former F. Louise Lawrence, whom he married in 1907; a daughter, Isabelle Richmond Reynolds; and a sister, Madeline Reynolds.

The death of Arthur M. Burtt on April 19 has been reported to the Alumni Office. Burtt, who hailed from Lowell, Mass., was a special student in Architecture with the Class. Since leaving the Institute he had rarely been heard from. For some years he was located on the Pacific Coast. He was last employed at Annapolis, Md., in the office of the supervising engineer, public buildings administration of the Federal Works Agency.

William H. Cadwell of Nashua, N.H., who was a student with the Class in the Course in Mechanical Engineering until the middle of our senior year, died on February 20 in his sixty-ninth year. In January, 1893, he went to work in the Jackson Mills, manufacturers of cotton goods, at Nashua. Starting as a draftsman, he worked through the different departments, becoming superintendent in 1898 and agent in 1900. He retired a few years ago. Born in Nashua on August 13, 1872, Cadwell had lived for many years at 10 Berkeley Street in that city. In 1896 he married Martha Lorraine Cotton, and they had three children, a son, William Dexter, and two daughters, Andrea and Lucille. Cadwell was a member of the National Association of Cotton Manufacturers, the New England Textile Club, and the Freemasons.

Charles F. Fitz, Jr., of Watertown, Mass., died on July 11. He took the Course in Mechanical Engineering with the Class. His engineering career was spent in the service of Massachusetts — with the Metropolitan Parks Commission until 1900, with the Massachusetts Highway Commission until 1901, and subsequently with the Metropolitan Water and Sewerage Board, which later became a division of the Metropolitan District Commission. — FREDERIC H. FAY, *Secretary*, 11 Beacon Street, Boston, Mass. GEORGE B. GLIDDEN, *Assistant Secretary*, 551 Tremont Street, Boston, Mass.

1894

As these notes are written, another academic year at Technology has begun, and the events of Alumni Day, the alumni dinner, graduation, and so on, are all past history. Alumni Day brought back several '94 men from points away from Boston, and as usual our Corporation members, Bovey and Lovejoy, were on hand for the official meetings as well as the festivities of the day. Ed Hunt came down from Portland, Maine, and Robert Weston and George Owen attended the Alumni Day events but were not at the dinner at the Statler. The other local men of the Class all seemed to have other engagements on that particular day. We missed Chapman, Claflin, Curtis, Pratt, Tenney, Warren, and the other regulars whose presence generally adds so much to our gatherings. We are continually reminded that we are getting to be of the "elder statesmen" class. On July 1 our genial George Owen passed to the status of professor emeritus after a long and successful career as professor of naval architecture and marine engineering. He thus joins George Haven in this group of celebrities and will, I trust, be ready to welcome the Secretary a year hence and Harry Gardner on the following year. This means that each of the four of us will have been on the staff for between twenty-six and fifty years, which fact speaks well for our staying qualities at least.

The Secretary had the pleasure of serving as chairman at the very excellent symposium held on Alumni Day, a full account of which was given in the July Review. An even greater honor came to him at Pittsburgh on June 17, when, as the retiring first president of the Institute of Food Technologists, he was presented with a beautiful and handsomely engraved gavel and a volume of appreciative letters from many distinguished men and from a large number of former students, commenting on his services as a teacher and as the father of the organization which has now become national in scope and is apparently filling an important place among the technical societies of America. Your Secretary finds it impossible to express clearly the deep satisfaction that such unexpected (and probably undeserved) honor brings to a man.

Frank Lovejoy, formerly president and now chairman of the board of the Eastman Kodak Company, was elected chairman of the National Industrial Conference Board at its meeting in New York City on May 21. His is a position of honor and responsibility, and the Class not only congratulates Frank but appreciates thoroughly his fitness for this signal mark of confidence by American industry as organized in this important body.

At the annual dinner of the School of Architecture to the graduating class, President Compton announced that the annual traveling fellowship which is awarded for high professional merit would henceforth be known as the Harry

1894 Continued

Wentworth Gardner Traveling Fellowship in Architecture. This announcement was greeted with great applause, which was indicative of the high regard in which Harry is held in the Department he has served so long, faithfully, and fruitfully. His influence has been unusual, and he has contributed much to the high standing in which the Department is held everywhere. The Class is especially proud that this honor has come to one of its members and that Gardner's name will thus be perpetuated at Technology.

Through the kindness of O.B. Denison '11, the attention of the Secretary was brought to a long article in one of the Sunday papers describing the career and the scientific attainments of W. H. Pratt, who has been connected with the General Electric Company in Lynn ever since graduation. Pratt's many inventions and the patents granted him were discussed, and it was pointed out that this modest engineer has been and still is an important factor in the great General Electric Company. Again the Class congratulates itself as well as Pratt, and we are proud of the record he has made.

The *Science News Letter* for July 19 carries a brief account of a patent just granted C. G. Abbot, secretary of the Smithsonian Institution, for an invention by which the heat of the sun can be used for cooking. As is well known, Abbot has been a student of solar energy for many years and has written innumerable papers dealing with his researches and their practical application in long-range weather forecasting and in other ways. The article describes this new invention as follows: "One object of the invention, given in the patent specifications, is 'to provide a novel solar heater which is highly efficient, compact, cheap to manufacture, durable, and easily used by the inexperienced.' Another is that it 'may be made of any desired small size without decreasing the efficiency.'

"To collect the sun's rays there is a metal mirror, bent to the shape of a parabola. Its long direction is parallel to the axis of the earth, and there is a clockwork to turn it during the day to follow the sun. In this mirror, where the solar rays are sharply focused on it, is a double-walled glass tube through which circulates a black liquid with a high boiling point. This absorbs the rays and is heated. The hot liquid then circulates through an oven at the upper end of the device, so that it may be used for cooking.

"Paradoxically, Dr. Abbot suggests that the heater may be used for cooling. With a refrigerator of the nonmechanical type in which the heat of a gas flame provides the operating energy, the heat from the cooker may be used instead."

Billy King and his attractive daughter, Patricia, spent a few hours with the Secretary at the Institute on May 17. Billy simply could not quit practicing law, and is now a member of the firm King, Frank and Whyman, 51 Chambers Street, New York, N.Y. New addresses have also been received for Frederick S. Bigelow, 922 North Sixth Street, Philadelphia, Pa.; Albert F. Hunt, Jr., Post Office Box 8, Mount Holly Springs, Pa.; and William L. Woollett, 6923 Franklin Avenue, Los Angeles, Calif.

The Secretary announces with deep regret the death of Albert H. Sawyer on April 18. — SAMUEL C. PRESCOTT, *Secretary*, Room 3-207, M.I.T., Cambridge, Mass.

1895

As we look back over past years, the memory of Alumni Day recalls to us a picture which each year gives hopeful inspiration to the new graduate and emphasizes to the Alumni the passing of years.

Each year at Alumni Day the spirit is about the same. We hear of the maintaining of past traditions of the Institute's objectives; the expanding of the wonderful services rendered each year; the great contributions the Alumni are making to industry; the effect the Institute's graduates are having on the world at large, in business, town, and government; and the inevitable plea for funds to carry on all activities.

These, however, are not the driving force which activates the yearly desire to return to the old stamping grounds. That force is the desire to recall, in person, the memories of the friendships and contacts made in the past. It is a great privilege to be able to experience these yearly pilgrimages, and only after repeated efforts do they become a part of the alumni life. The man who stays away from Alumni Days for ten, twenty, or thirty years, and then attempts to make up for lost time, learns too late that many faces are missing, and his repentance is no measure of his great loss.

During the past several decades we have lost many of our good fellows, and those who have experienced the yearly contacts with these lads have been bountifully paid for the effort in getting together yearly, at most any cost.

This year's gathering indicated a more sober temperament, possibly on account of the hectic condition of the world at large. Let us look forward to our fiftieth reunion. It is but four years away, and even if some of us may not realize our dream, we can have the joy of anticipation.

The weather on Alumni Day was perfect, with the wind a trifle boisterous. The lectures in the morning were interesting. The luncheon on the lawn brought together Eugene Clapp, George Cutter, Luther and Mrs. Conant, Henry and Mrs. Jackson, Sammy Hunt, and Yoder. Luther Conant made his first appearance in many years. Walter Williams also attended the dinner in the evening at the Hotel Statler. John Sherman was scheduled to appear, but was absent for some reason. Gerard Swope attended the unveiling ceremonies in the Rogers Building, but he had to leave for New York early, and we missed him at the dinner. Incidentally, your Secretary's collection of Alumni Day steins is increasing.

In August we learned that Mrs. Thomas Hibbard (Bertha Leavitt Bartlett), VII, had died on January 19. — Winslow Abbot Wilson, VI, died on April 29. His home was at 72 Magnolia Street, Boston, Mass.

Arthur S. Coburn, III, of Hillsboro, N.H., passed away on April 17. A number of us will remember Arthur as a ripsnorting, impetuous Yankee from Lowell, Mass. He was naturally inclined toward hard, rough, manual labor, as evidenced by his service with the Boston Elevated Railway, Brooklyn tunnel, National Tube Company, J and L Steel Corporation, American Bridge Company, Indiana Steel Products Company, and the Colorado Fuel and Iron Corporation. Although he was graduated from the Course in Mining and Metallurgy, he followed mechanical pursuits more closely. As a ship fitter and erector at the American International Shipbuilding Corporation at Hog Island, Pa., he always believed "the best and cheapest ship, and also the fastest time made on a ship at Hog Island, was due to my efforts." In later years he drifted to New Hampshire where he had a farm and dairy.

Elizabeth Florette Fisher, XII, died at her home, 119 North Park View Street, Los Angeles, Calif., on April 25. Professor Fisher followed a successful educational and professional career until her retirement a few years ago. She had the unique distinction of being the first woman field geologist sent by a company to locate oil wells. There had been women geologists in office work, but Professor Fisher was a pioneer in the field work. At Wellesley College as an instructor in geology and mineralogy in 1896, she became head of the geology department in 1908. She gave valuable service in the cause of conservation by popular education through lectures in the university extension courses in Boston. Her textbook, *Resources and Industries of the United States*, first published in 1919, gave proof of her great contribution to the knowledge of our natural resources and their conservation.

Edward Lawrence Hurd, II, passed away on May 26 at his home at 152 Adams Street, Milton, Mass. For a year following graduation Hurd was a draftsman with the Boston Elevated Railway and the Boston Edison Company. During the next two years he was a liability insurance solicitor for L. Burge, Hayes and Company, Boston. During 1899 he was treasurer of the Boston Shoe Tool Company. In 1920 he joined the United Shoe Machinery Corporation and rose to the position of department sales manager and finally to vice-president in charge of sales. Hurd remained with the shoe machinery company until several years ago, when he retired on account of ill-health. We all knew Hurd as Laury. An interested, loyal, and enthusiastic Tech man, he could always be depended upon to further the class interests at any time. He loved athletics — especially golf. During the summer he lived at his home in Chatham on Cape Cod, where he enjoyed the sea and the land sports. He was a member of Town Club of Milton, Milton Club, and the Country Club of Brookline.

1895 Continued

Mrs. Hurd survives him. He also leaves a daughter, a granddaughter, a sister, and two brothers.

Alfred Edward Zapf, IV, died from circulatory exhaustion at his home at 726 West Walnut Avenue, Orange, Calif., on August 29. He was one of the grand old men of '95, having reached the age of seventy-six. After leaving Technology, he followed the architectural profession in the East for a few years. In 1898 he became secretary of the American School of Correspondence. His work with the school covered the planning of courses and securing of textbooks. In 1902, an educational alliance was formed with Armour Institute of Technology, and the correspondence school was moved to Chicago. In 1912 he severed his connection with the school and moved to California. He acquired an orchard near Orange, where he grew avocados, lemons, and oranges. Zapf lived the simple life, close to nature. He loved the trees, the plants, the stars, and was most tolerant of peoples of all classes and creeds. His friendship was highly prized and respected. He followed the career of all '95 men and especially those whom he knew intimately. He was a source of information regarding classmates, and your Secretary will miss him. His great hobbies were flowers and dogs, especially Airedales. He leaves his wife, Jane Georgeanne Galloway Zapf, a sister, two nephews, and an aunt. He was laid to rest in his home town, Freeport, Ill., where in 1901 your Secretary ushered at his wedding. He led a life of loving service to his fellowman.

John W. Ames, IV, has moved to Duxbury, Mass. Charles E. Birge left Scarsdale, N.Y., to live in Westport, Conn. Colonel Harold G. Fitz, III, may be reached at 3811 Segovia Street, Coral Gables, Fla. Mrs. Henry C. Grant, VII, has moved from Milton, Mass., to 63 Hancock Street, Boston. Rittenhouse Moore is now living at the Princess Anne Hotel, Virginia Beach, Va.

In August our Class President, Al Sloan, Jr., was vacationing in Los Angeles, Calif., and his cryptic statement to the press was: "The honeymoon stage of defense production is ending, and from now on we shall be asked to make sacrifices." — Eddie Alden writes about his disappointment in not being able to secure his long-sought-for auto trailer. Under existing defense requirements and priority material allocations, he is out of luck and will be forced to dream of his world trailer-cruise until after the war. He tells of the death on July 26 in Hartford, Conn., of Benjamin Lee Whorf '18, son of our Harry Whorf. Young Whorf was assistant secretary of the Hartford Fire Insurance Company. He was noted as an expert on Mayan and Aztec life and records, and had had several articles published in The Review. Harry and Mrs. Whorf were most artistic. One of the boys is a celebrated water-color artist.

East River Houses is the ninth public-housing project completed in New York City. It is located in one of the most squalid areas in the city, one in which the benefits of public housing were most needed. The complete report of this project was recently issued by the New York City Housing Authority, Gerard Swope, chairman.

The members of our Class are gradually falling into line and responding to the appeal for financial subscriptions to the Alumni Fund. Every fellow knows best just what he can give. If it is at all possible, please get your name on the list. Eugene Clapp, our Class Agent, will tell you all about the Fund. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass. JOHN H. GARDINER, *Assistant Secretary*, 10 Clinton Place, Mount Vernon, N.Y.

1896

The story of our forty-fifth reunion can now be told. The start was made at lunch in Walker Memorial on Thursday, June 5. Present were Anderson, Arthur Baldwin, Damon, Davis, Henry, Locke, Nevin, Rockwell, Sager and Mrs. Sager, Smetters, and Haskell Smith. All these drove to Osterville in the afternoon in the rain. Other arrivals at East Bay Lodge that day were Bates, Crosby, Hallaran, Harrington, Hewins, P. B. Howard and Mrs. Howard, Moat, Pauly, Russell, Rutherford, Stearns, Tyler, Underhill, and Wayne, making a total of twenty-five men. Dan Bates was the last to check in after motoring around the Cape in the darkness. Host Charlie Brown and his ménage radiated hospitality inside in spite of the gale outside, but Dave Beaman's brand of New Bedford electricity suffered a voltage drop because of the storm, and the electric bulbs gave only a dim religious light that sent everyone to bed by ten o'clock or shortly after. It was a great night to sleep.

Friday morning the storm had passed, giving way to a beautiful cool day. The informal program provided for a general free-for-all social time with intervals for meals. Some walked; some motored. One group paid a friendly call on the twenty-five-year class of 1916 which was celebrating at the Oyster Harbors Club. The '96 golfers played on the Oyster Harbors course and reported that some parts of it had the characteristics of duck ponds after the rain. Additional arrivals on Friday were Butler Ames, Billy Andrew, Bakenhus, Harry Baldwin, Al Cluett, Will Coolidge and Mrs. Coolidge, Dorrance, Jim Driscoll, Henry Hedge, Will Hedge, Sam Hunt, Jackson, Jacobs, Laws, Pierce, Tilley, Tucker and Mrs. Tucker, and Con and Mrs. Young. This brought the registration up to forty-three men and five ladies. Because of important engagements Hewins and Russell could not stay for the rest of the festivities.

Friday evening, all gathered in the main hall of the hotel to enjoy movies of previous reunions. The films were run off by Coolidge and Jackson. Doc Coolidge also sprang a surprise treat by showing slides of the fellows present as they looked in our senior portfolio. Time certainly has made changes! The retiring hour was considerably later that night for some of the gang.

Saturday was another cool, clear day with no set program before the class dinner in the evening. Additional arrivals were Beaman, Myron Fuller, Grush, Gaylord Hall, Hersey, Hultman and Mrs. Hultman, and Henry Sears, bringing the total attendance up to an even fifty men and six ladies. Movies were taken after lunch and a grand group photograph before dinner. The golfers played on the Wianno Club course. Charlie Brown went the limit in providing a delicious dinner and received a rousing rackety-rix cheer. This year as a precautionary and protective measure the ladies had their supper served earlier than the men.

At the class meeting after the dinner, attention was focused on the five novitiates who had not previously attended a class reunion: Andrew, Cluett, Dorrance, Henry, and Sager and Mrs. Sager. Messages were read from Henry Worcester '97, President of the Alumni Association, Mark Allen, Barker, Clary, Clifford, Lawrence, Leighton, Leland, Litchfield, Lythgoe, Melluish, Morse, Partridge, Elmer Robinson, Sturm, and Tozier. The Secretary's report was read and accepted, and the financial statement made, showing a balance of $1460.08. The hat was passed and fifty dollars were added to the treasury. Golf prizes were awarded to Crosby and Will Hedge. It was significant that the lapse of five years had had the effect of making the best score this year 95 as compared to 91 in 1936. A silent toast was drunk to members who had attended former reunions and who had passed on since 1936 — Brackett, Joe Driscoll, Emerson, Fred Fuller, Holbrook, Joe Howe, Northup, Peirce, Root, and Thompson — and also to other non-attending classmates whom we had lost during the same period — Adams, Barto, W. J. Batchelder, Burnside, Colburn, Coristine, T. B. Crane, P. K. Crocker, Dyer, F. E. Field, Miss Fisher, Gage, Green, Hart, Hormel, Lootz, Peckham, Miss Savage, M. A. Sears, P. D. Smith, Wall, Wells, Whitaker, and Whitten. Statistics show that out of 614 people who were at any time registered as '96 there are now 360 living, while out of the 193 who were graduated in 1896, including three with advanced degrees, 135 are living.

The climax of the evening was a talk and demonstration by our own Dr. Coolidge, who gave us another preview of some of the startling scientific and industrial developments that are coming to fruition. Time passed all too rapidly, and he could have kept us for hours, but the meeting officially adjourned at 11:00 P.M.

Sunday after breakfast the real exodus began, and by evening all had departed except the Sagers, who stayed until Monday morning. The golfers could not resist the temptation to get in another golf game, and they stayed until Sunday afternoon.

Alumni Day in Cambridge brought out five additions to the Osterville list: Mrs. Davis, Henry Gardner, Paul Litchfield, Elmer Robinson, and George Stratton. It was a treat to see Stratton again and

1896 Continued

to learn that he had succumbed to the urge to be with us in spite of the very busy life he is leading in Washington in the government aviation department. Altogether the attendance of '96 on Alumni Day totalled twenty-five. Many of the fellows gave expression to their opinion that the reunion at Osterville and the program of Alumni Day set a high mark, and all agreed to be on hand at our next.

Credit is due to P. B. Howard for acting as official recorder at East Bay Lodge, where he secured the signature of every man. His paper was later planographed and a copy was sent to every registrant as a memento and also a reminder of the good time we had on our forty-fifth. Four regulars have a perfect record of never having missed a class reunion: Grush, Hersey, Locke, and Rockwell.

The only disappointments were the misfortunes which kept away some of the fellows who rarely miss our reunions and who had confidently expected to be with us. A strike broke out in Mark Allen's plant just as he was about to start east. Ed Barker was receiving honors from the staff and alumni of the Lowell Textile Institute in observance of his retirement at the age of seventy. Eddie Bragg had to be present at graduation at the University of Michigan. Joe Clary had to stay on the job in Washington because of the sudden illness of one of his fellow officers in the bureau of ships. Billy Clifford wired at the last minute that he could not make it. Charlie Lawrence's health was such that he finally decided that the trip would be unwise. Marsh Leighton had been looking forward to the celebration for five years, but the defense program ganged up on him and held him in Washington. Walter Leland in San Francisco longed to be with us and did not abandon hope of coming until the last minute. Paul Litchfield had to stay in Akron for an aircraft conference through Saturday, but he got around for Alumni Day. Lythgoe had to be in St. Paul to present a paper at a meeting of the National Association of Food Control officials. Eddie and Mrs. Mansfield had counted on a real time at Osterville, but Eddie developed an infection and, although he was improving, his doctor ordered him to stick around home where he could be kept under observation. Circumstances prevented Jim Melluish from attending. Lou Morse had made his train reservation and then was seized with a sudden indisposition which led him to visit his doctor. He was advised to take things easy for a few days, so he had to call the trip off. Father Partridge was at a trailer camp near Philadelphia recuperating from his recent illness but he had not reached the stage where he felt that he could risk a trip to Cape Cod. Mike Sturm had his plans go awry and was obliged to remain in Evanston. Harry Tozier had to be in Toronto to attend to the transfer of his house.

Bakenhus was most indefatigable in taking pictures of everyone on all occasions with his fine camera. With his characteristic generosity he made liberal distribution of prints to the various men who attended the reunion. The Class owes a debt to the Admiral for this splendid service.

A photograph was also taken by a commercial photographer just prior to the class dinner on Saturday night, and copies were secured by almost everyone present. As a matter of record, the following list is given of the men in this photograph. Back row, standing, from left to right: Crosby, Pauly, Arthur Baldwin, Bates, Rutherford, F. H. Smith, G. C. Hall, Wayne, Tyler, Rockwell, Harry Baldwin, Laws, and Tucker. Second row, standing, from left to right: Anderson, Jim Driscoll, Bakenhus, Stearns, Jacobs, Andrew, Pierce, Dorrance, Hallaran, Sager, P. B. Howard, and Underhill. Third row, seated, from left to right, Young, Tilley, Charlie Brown (our host), Locke, Jackson, Smetters, Harrington, Damon, and Moat. Fourth row, on the ground, from left to right: Henry, H. K. Sears, Hunt, Cluett, and Bob Davis.

Movies were also taken by those who had movie cameras. The film is being assembled into a reel by Henry Jackson as a record to be exhibited at later meetings.

Eddie Mansfield, who was unable to attend because of illness, went through a siege of hospitalization following our reunion, but by the end of the summer he was reported to be getting back to normal. Lou Morse, who likewise had his plans upset by illness, apparently needed only a good rest after his very strenuous life just preceding our reunion. He obeyed the doctor's orders, and the rest restored him to good condition.

Joe Clary, who had an unexpected overload of work at reunion time upset his plans for attending, had a busy summer with all of the navy activity in Washington. He was finally obliged to take a short rest under the doctor's care in order to regain strength for continuing his arduous duties. Tozier stayed in Friendship, Maine, for a good part of the summer. His plans are still indefinite, but he is thinking of doing some traveling before finally settling down in retirement.

Wayne left Boston after Alumni Day, making the trip home by easy stages to Indianapolis in his automobile. He went west out of Springfield to Poughkeepsie, right over the top of the Berkshires, thence to Harrisburg and the Pennsylvania turnpike, traveling at the rate of 60 or 75 miles an hour, which he said was an experience no one should miss. He then cut a straight line for Ohio, where he made a side trip, and then another beeline for home.

Lythgoe has sent the Secretary a copy of his paper, entitled, "A Plea for More Research Work by the Chemists Employed in State Food and Drug Inspection," presented at the forty-fifth annual conference of the Association of Food and Drug Officials of the United States in St. Paul, Minn., on June 10. It gave an excellent story of Lythgoe's development of the Massachusetts food and drug division in the Statehouse, and the problems and work that are now presenting themselves.

Steve Crane, in acknowledging receipt of the planographed signatures, said that he could clearly visualize several of the fellows whose names he read, and it brought back pleasant recollections of the men. He hopes to be with us at future get-togethers.

Con Young wrote in September that his summer on Cape Cod had benefited him very much. In Florida all through last spring his old neuritis had caused him considerable pain. He felt well enough to make the automobile trip north and attended our reunion, although he confesses that he was not feeling up to par. Later in June an aching molar gave him a trying time until it was extracted. This seemed to be the turning point, so that with fine Cape Cod weather and a dip in the ocean every day Con is feeling more like himself again. He complained of the lack of help down on the Cape this summer, which has forced him to do considerable labor that is usually done by the hired man.

Bradley Stoughton, consulting metallurgist, long-time professor of metallurgy and lately dean of engineering at Lehigh University, past secretary of the American Institute of Mining and Metallurgical Engineers (1913–1921), has been nominated president of the American Society for Metals for 1942. The nomination is equivalent to election.

Frederick E. Field's son Charles reports that a posthumous memorial award has been made to his father, as follows: "The Canadian Section of the American Waterworks Association pays tribute to the memory of Frederick E. Field for his contributions to the activities of this Section and is proud to honor his name by inscribing in its records the adoption of this Memorial Award."

Joe Harrington sent in a reprint of his article, "Controlling Characteristics of Ash With Special Reference to Illinois and Indiana Coals," which appeared in *Combustion* last May, and which set forth the results of Joe's successful research for preventing clinker troubles.

The Secretaries have had a busy summer, including some traveling. Rockwell maintained his regular golf games with Fred Damon and others. He made a rather quick trip to Harriman, Tenn., in June, but later on he and Mrs. Rockwell made an easy-stage trip by automobile to Harriman, taking in the Delaware Water Gap, the Great Smokies, the Cumberland Range, the Shenandoah Valley, and Asheville.

Locke was somewhat more ambitious and spent seven weeks visiting various mining districts and alumni groups in the northwest, the west, and the southwest, taking in the American Institute of Mining and Metallurgical Engineers' meeting in Duluth en route. On this trip he met several classmates. The first stop was in Burlington, Vt., where he spent the night with Jacobs at his camp on Lake Champlain. One particular bit of enjoyment was a combined evening sail and chug-chug ride on the lake in Jacobs' sailboat equipped with an Evinrude motor. Jacobs had spent two days with

1896 Continued

Locke in Boston after the reunion and had then flown back to Burlington, getting some unusual camera pictures of various mountains on his way. He had been busy with commencement exercises of his own college, the University of Vermont; with attendance at the American Association for the Advancement of Science meeting in Durham, N.H., where he delivered a paper on the Green Mountains; with trips to various parts of Vermont in his capacity of state geologist; and with the customary duties around school, around home, and around his camp.

Locke went by automobile as far as Detroit, and there parked the car with Mark Allen, thus gaining two delightful days of enjoyment of Mark's hospitality — one on the way west, and the other on the return east. Mark is taking life in his usual easy stride but has not recovered from his disappointment in failing to get to the reunion. In Berkeley, Calif., Locke had lunch with Charlie Hyde at the University of California, and then called on Ernie Mead, who lives in Sausalito, across the Golden Gate Bridge from San Francisco. Hyde is the same busy man as usual, but Mead, who has retired, is maintaining widower's quarters at his old residence, where he has frequent visits from his children.

Your Secretary went to see Walter Leland in San Francisco. He is very busy in the boiler business, but not so busy that he and his son could not drive the Secretary around Palo Alto and then to Leland's ranch at Walnut Creek, about twenty-five miles east of San Francisco, across the bay, for a very enjoyable family dinner followed by an all-too-short evening of reminiscences.

On the return by automobile from Detroit, the Secretary stopped overnight at Canandaigua, N.Y. That is now the home of Guy Morrill, who was located by telephone. Guy lives about twelve miles out of the city, in a place rather difficult to find after dark, so that it was not possible to call upon him personally. He said that in theory he is now a retired clergyman, but actually he has a great deal of work involving calls and travel through various places, so that time does not hang on his hands.

William Q. Huey died on September 17 in Everett, Mass., which had been his residence almost all his life. He was born on March 31, 1874, in Easthampton, Mass. He married Julia B. Richards on December 6, 1899, and there were three children — Norman R., born on September 22, 1900; Eleanor M., January 16, 1903; and Harriette, February 2, 1905. He had followed industrial lines, and was engaged in the heating and plumbing business in Boston. At one time he was interested in copper mining in New Mexico. Huey was a man who had appeared at some of our class gatherings and reunions, but in later years his interest appeared to lapse somewhat, so that little had been seen or heard of him.

Finally, we must make a plug for Henry Grush for the Alumni Fund. As a result of his efforts the record as of September 26, when these notes were being written, shows that 75 members of the Class have contributed $915, or an average of $12.20 each contributor. Last year, as of the same date, 66 members had contributed $758.50, or an average of $11.48. These figures indicate that the Class is marching on toward the ultimate goal set for the Alumni Fund. The goal calls for $100,000 net to M.I.T. annually, or an average of at least $15 per contributor. Older classes like ours should exceed the $15 average in order to make up for the lower average to be expected from the very youngest classes. Your attention is called to the Alumni Fund page elsewhere in this issue. Keep in mind that on the old basis the $5 paid for dues covered the subscription to The Review and the operating expenses of the Alumni Association, so that a contribution today of $5.00 to the Alumni Fund does not actually net anything for M.I.T., and only the amount that a contribution exceeds $5 benefits the Institute. If you have not already sent in your contribution for the Alumni Fund for the year ending June 30, 1942, it will cheer Henry Grush very much if you will do so. — CHARLES E LOCKE, *Secretary*, Room 8-109, M.I.T., Cambridge, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge, Mass.

1897

Louis F. Buff, I, died on August 29 in Boston, Mass., at the age of sixty-five. At the time of his death he was president of the Buff and Buff Manufacturing Company of Jamaica Plain, manufacturers of precision and surveying instruments. He was also president and director of the Henrici Laundry Machinery Company and vice-president and director of the Babson Dow Manufacturing Company, both in Boston.

Buff was a member of the Boston Society of Civil Engineers, the Harvard Club of Boston (having attended Harvard College for two years after leaving Technology), the Harvard Engineering Society, the Engineers Club, Eliot Club, Boston Chamber of Commerce, and the Norfolk Golf Club. He lived in Brookline, Mass. He leaves a widow and four daughters. Louis was always an enthusiastic attendant at the class reunions, and he will be missed greatly at future gatherings. Those who were at the reunion and dinner at the Colonial Inn, Concord, Mass., in June, 1940, will recall the presence of Louis, his wife, and one of his daughters. Two classmates who were there have since passed on — Charles W. Bradlee and Louis F. Buff.

The Secretary has been advised of the following deaths, about which there are no particulars known: Michael A. Sullivan on June 17, 1940; Theodore E. Videto on March 10, 1941; and James G. Moran on April 12, 1941.

Largely because of the generosity of a few new subscribers who had not subscribed the first year of the Alumni Fund, '97 had reached, as of August 15, 86 per cent of its quota in total amount of contributions. Eleven men increased the amount of their contributions in the second year, thus placing '97 next to the top in the Gay Nineties group of classes. The Class of '90 went over the top with 120 per cent of its quota. Our present position will be improved further when subscriptions are received from fifteen men who subscribed last year, but who, doubtless through oversight or absence on a long vacation, have not yet sent in their subscriptions this year.

As to the number of contributors, however, we are actually in the lowest position among the Nineties, having obtained only 52 per cent of our quota. Surely more members of our Class can afford to subscribe a few dollars toward the Fund, even if only as a token subscription, as one of our members expressed it.

The record of all classes up to September 3 as to the number of contributors shows an increase of 26 per cent, so that our lack of response is even more significant in comparison. Members of the Class should be glad to join this worthy and important movement. — JOHN A. COLLINS, JR., *Secretary*, 20 Quincy Street, Lawrence, Mass.

1898

Six members of the Class attended the dinner at the Hotel Statler on Alumni Day, June 9. They were Arthur Blanchard, Ed Chapin, Walter Cleveland, Fred Dawes, Lester Gardner, and George Treat. The dinner provided such an enjoyable reunion for the six of us and the general Alumni Day program was so enjoyable that your Secretary regrets that more of our Class could not attend. We did broach the subject of our forty-fifth reunion, which is only about a year and a half away (June, 1943) and which, of course, will bring every '98 man who can come.

George Treat, who is president of the finance committee of Hebron Academy, Hebron, Maine, had attended the exercises there in the forenoon, and by motoring steadily reached Boston in time for our dinner.

When we were looking through a file of old clippings, we came across this proverb which is credited to Roger Babson: "People cannot be paid merely for living; rather only for earning a living." This, like many of Roger's sayings, is an eternal truth that for the moment seems to be contradicted by the temporary trend of affairs.

George Anthony, writing on another matter, ends with the following paragraph of general interest: "Some day I will write you a letter and give you some data about myself. Now it is sufficient to say that I am in splendid health and can still march twenty miles a day with full infantry equipment. I am still fairly well off, although the foreign and domestic situations have given me a great frying out in the last three or four years.

"In October I expect to hand over to younger hands what little torch I have been able to bear, and then I am going back to the job of Yankee whittling and sitting in the kitchen corner, smoking a corncob pipe. Maybe I will write a book

1898 Continued

that will go through forty of fifty editions, and proceeds from that will keep me in spare tires and chewing tobacco. I hope that you and all the rest back in my old New England homeland are well. As for me, I am now an old Michiganer after many years around these parts, but maybe I will come back to see you again in 1943."

George's remarks remind us of how many of our Class are now retiring or trying to retire from the activities of their work. The following address changes strongly suggest this retirement tendency. Howard L. Bodwell can now be reached care of Harrison Bodwell, 3460 School Street, San Diego, Calif. Howard retired from his business in Vandergrift, Pa., in April. — William S. B. Dana, who used to live in Nice, France, can be addressed care of the American Express Company, Washington, D.C.

Robert M. Draper is now at 82 Lincoln Street, Belmont, Mass. Charles S. Hurter's mail goes to the mail room, Nemours Building, Wilmington, Del. — Miss Minerva A. Laing has moved from Rochester, N.Y., to 302 Groves Street, Chicopee Falls, Mass.; Samuel A. Neidich from Burlington, N.J., to Shadow Pines, Edgewater Park, N.J.; and Ralph E. Wilder from Lexington Avenue to 919 Grant Boulevard, Syracuse, N.Y.

A letter from Van Rensselaer Lansingh tells of his work in California last summer: "I am still one of the vice-presidents of the Molybdenum Corporation of America and am located at 500 Fifth Avenue, New York City. I look after the company's contracts with miners in the far west and consequently make a trip out there several times a year, making my headquarters at the California Club in Los Angeles.

"In addition, I look after a good deal of the company's affairs in Washington, D.C., especially in connection with priorities concerning products in which we are interested — tungsten, molybdenum, vanadium, and boron. I also handle a few of the old sales accounts which I formerly had when I was with the York Metal and Alloys Company. So among the three jobs I manage to keep out of mischief most of the time."

On June 2, Dan Edgerly dropped in, and he and Joe Riley and the Secretary had lunch together. Dan was on a tour of the properties of his company and had just come from an inspection of a titanium mine in the Adirondack region.

The death of Thomas Carroll on February 7 has already been mentioned in the notes, but we now have a few facts about him. We quote a clipping from the Boston *Globe* of February 10: "Dr. Carroll was born in Boston, the son of the late Patrick J. and Johanna D. Carroll. He was graduated from Holy Cross College with the M.D. degree and was graduated from the Harvard Medical School in 1899. He also received a degree from the Massachusetts Institute of Technology.

"Besides his profession as a surgeon he was an accomplished artist and his latest painting was exhibited in New York Christmas week. . . . As an orthopedic specialist, with the rank of major in the Army, he was stationed at Hoboken during the World War. He was affiliated with the Rockefeller Foundation, was on the staff of the United States Veterans' Base Hospital, No. 81; the West Kingsbury Road Hospital in the Bronx and was in the New York City Public Health Service. He was also on the staff of the William Blake Bates Hospital and the New York Polytechnic Hospital."

A classmate sent us notice of the death of Carroll A. Bennink, IV, on June 20 in Washington, D.C. Bennink followed the profession of architecture devotedly until his death. His professional work was principally in Boston, San Francisco, and Washington. Some years ago he was a staff member of the supervising architect's office, Treasury Department, as one of its designers. He served in the office of Upman and Adams and also with A. P. Clark, Jr., where he was employed at the time of his death.

Bennink was a former member of the University Club of Washington, where he had many friends and in which he took an active interest. The board of governors of the club adopted a special resolution of deepest sympathy which it sent to Carroll's brother, Arthur S. Bennink, of Cambridge, Mass. Carroll frequently attended the meetings of the Washington Society of the M.I.T.

During the World War he served with distinction in France as a member of the American Red Cross. He held the rank of major. He loved France and was a student of French literature. Bennink was an extremely likable companion, and his humor was lively and sparkling. His artistic ability, as shown by his watercolor sketches and his appreciation of art, was of a high order. — ARTHUR A. BLANCHARD, *Secretary*, Room 4–160, M.I.T., Cambridge, Mass.

1900

Reunion day brought out nineteen of us: Conant, Mr. and Mrs. Cutting, Draper, Fitch, Ingalls, Jackson, Neall, Patch, Mr. and Mrs. Russell, Silverman, Mr. and Mrs. Smith and son, Mr. and Mrs. Wastcoat, Ziegler, and the Secretary. We had quite a lively table at the lunch on the lawn and a very enjoyable time at the dinner in the evening. Not to be forgotten was the entertainment at the University Club between the two Alumni affairs. All in all it was an enjoyable day.

At the last council meeting in May, the following members of the Class were present: Draper, Fitch, Patch, Russell, Ziegler, and the Secretary. Draper entertained in his own inimitable way at the Harvard Club of Boston before the meeting.

Charlie Locke '96 sent us the following notice: "Edward E. Bugbee, Associate Professor of Mining Engineering at M.I.T., and now on leave of absence in California, is retiring in October. Except for an interval of four years, Professor Bugbee has been with the Department of Metallurgy since 1900. In addition to serving on the Faculty of M.I.T., he has taught mining and metallurgy at Iowa State College of Agriculture and Mechanical Arts and at the University of Washington."

We are indebted to a press clipping service for the following: "The Rev. Henry M. Brock, S.J., newly appointed pastor of Holy Trinity Church as successor to the late Rev. Charles P. Gisler, S.J., was introduced to his parishioners last Sunday. He addressed the congregation at all the masses. Father Brock is a native of Boston, and a former member of Holy Trinity parish. He was educated at Boston College, Massachusetts Institute of Technology and at Hastings, England, where he was ordained a priest. Father Brock taught science at Holy Cross College, Boston College and the Jesuit Seminary in Weston. He comes to Boston from Pomfret, Conn., where he was rector of St. Robert's Hall."

A note from Hapgood states that he is still having difficulty with the priority board getting materials to keep his plants going.

We were again privileged to see a picture of smiling Jim Patch sitting as president of the Baptist Social Union at the Andover Newton Theological School night. The picture was in the Boston *Herald* of June 3. — It was our pleasure to meet Mr. and Mrs. Beekman at the Brae Burn Country Club in June. They wanted to be remembered to all class members.

Ike Osgood wrote that he was laid up with a severe cold and so could not get to the June reunion. He had a fine trip to Florida in the spring and spent the summer at Wells, Maine. — Leigh Keith of Chicago called on your Secretary in the first part of August and reported that he is very busy as secretary of the Western Society of Engineers. He looked the picture of health after a vacation on Cape Cod and wanted to give his best to the classmates.

Hal Jouett wrote: "I'm sorry I didn't get over to Technology's activities in June and see a few of you fellows. I rarely see a classmate here except Tuck, whom I see quite often. Nothing new so far as I am concerned — same work, keep busy, health and spirits good."

Hal enclosed a clipping about the death on June 7 of Arthur Reimer, I: "Arthur A. Reimer, former chief engineer of the East Orange Water Department, and a consulting engineer here for a number of years, died . . . at his home 45 South Maple Avenue after a long illness. He was born here 65 years ago. After graduation from Massachusetts Institute of Technology in 1900, Mr. Reimer was employed by a street railway company. He was chief engineer of the Water Department from 1905 until 1917, when he was commissioned a captain of United States Army Engineers. He was mustered out as a major. Mr. Reimer was a trustee of the First Baptist Church for thirty-eight years and president of the board for eight years. He leaves a widow, Mrs. Agnes Estes Reimer; a son, three daughters, a sister and four grandchildren."

1900 Continued

Arthur had suffered from arthritis a great deal in recent years. A letter from him last spring mentioned his inability to attend the June reunion.

The Register of Former Students advised us of the death of William A. Dorey, III, about one year ago at Newark, Ohio. — Ike Osgood sent in a clipping about George O. Adams, V, who died on June 22: "In separating two fighting dogs, one of which was his own collie, George O. Adams, 63, of 89 Milk Street, North Andover, early last evening suffered several bites, was stricken with a cerebral hemorrhage, and died while being transported from the scene on Winter Street, North Andover, to the Lawrence General Hospital.

"Mr. Adams, who was chief chemist at the State Department of Public Health experiment station on Island Street . . . was reported by North Andover police to have been riding in a country section of the suburban town with his wife and daughter, Frances Adams, when he stopped on Winter Street near the old Rea home to allow his dog to exercise. The Adams collie became embroiled with a police dog owned by an unidentified woman who had stopped under a tree to polish her automobile. The police dog broke a rope that tethered him to the automobile.

"After being bitten in his successful attempt to separate the dogs, Mr. Adams slumped to the running board of his car. Fireman Christopher Higginbottom and Police Officer Daniel F. Shine responded and took Mr. Adams to the Lawrence General Hospital where he was pronounced dead on arrival at 9:10 P.M.

"Mr. Adams, the son of the late Mr. and Mrs. Adams, was a native and lifelong resident of North Andover. . . . He was an ardent motorist, each year driving to some far distant point in the United States. While on these trips he indulged one of his hobbies of collecting relics of the Civil War on southern battlefields. Early in radio's brief history he became an enthusiast of the airwaves. Surving him are his wife, Mrs. Pearl Adams; one daughter, Frances, who arrived in North Andover only yesterday on leave from her position in the Department of Commerce, Washington, D.C., and a son, G. Edwin Adams of North Andover."

Notice has been received from the Register of Former Students of the death on October 14, 1940, of Walter E. Rabbeth, who was one of the star pitchers on the freshman baseball team.

Recent changes of address follow: Ben E. Scott, Frederica Hotel, Little Rock, Ark.; Percival E. True, Post Office Box 2104, Carmel, Calif.; George A. Tweedy, 2261 Prosser Avenue, West Los Angeles, Calif.; Professor Edward E. Bugbee, 110 Strathmore Road, Brookline, Mass.; Walter C. Chaffee, 312 Pleasant Street, Birmingham, Mich.; Robert H. Leach, Box 263, Fairfield, Conn.; Miss Jean B. McIver, 12 Harvard Street, Worcester, Mass. — C. BURTON COTTING, *Secretary*, 111 Devonshire Street, Boston, Mass.

1901

The fortieth reunion was held at the New Ocean House in Swampscott, Mass., on June 7 and 8 with thirty-three present.

Following is the list of those who attended, in the same order, from left to right, as they appear in the class photograph: Front row, Vermilye, Robert Derby, Du Pont, Robert Williams, Wight, Moore, Taft; Second row, Lange, Chambers, Evans, Holmes, Church, Nat Patch, Seaver, Bittinger, Stearns, Hildreth, McGann; Third row, Farnham; Fourth row, Howard Wood, Boyle, Harry Allen, Arthur Hayden, Dubois, Weil, Russell Putnam, Ed Davis.

In addition to the twenty-seven appearing in the photo, the other men who attended the reunion but who were either camera shy or playing golf were: Brigham, Ward Coburn, Higgins, Lohbiller, Peterson and Ralph Robinson.

President du Pont presided at the class dinner on Saturday evening, June 7, and all the members we have mentioned were present at the dinner except Lohbiller. Preceding the dinner a very pleasant cocktail party was enjoyed by all; those not indulging in cocktails enjoyed the occasion just as much as the others. After dinner a business meeting was held and the Secretary read the minutes of the thirty-fifth reunion meeting, since which time no meetings have been held up to this fortieth reunion. President du Pont read a telegram from Henry E. Worcester '97, President of the Alumni Association, which conveyed best wishes to all members of the Class of '01; also a telegram from Bill Pepperell which sent greetings and congratulations and his sincere regret that he was not able to attend. Letters were also read from Warren Bickford and Robert White, expressing their regrets at not being able to attend and sending best wishes to all present.

President du Pont then called for the Treasurer's report which was made by the Secretary-Treasurer and showed that there was a reasonably good surplus in the treasury. The Treasurer also reported that the receipts of the Class had allowed continuation of the $50 annual contributions to the Advisory Council on Athletics. The President then requested the Secretary to read a list of the members who had died since our thirty-fifth reunion, whereupon all rose in silent tribute to those members. Thirty have died since 1936. The Secretary also read a list of addresses wanted, and several were furnished.

Classmates present were then listed by Courses, and it developed that Courses I and II were tied, eight being present from each Course. Total representation by Courses was as follows: Course I, 8; Course II, 8; Course III, 2; Course IV, 0; Course V, 4; Course VI, 2; Course VII, 0; Course VIII, 0; Course IX, 1; Course X, 4; Course XI, 1; Course XII, 0; Course XIII, 3; total, 33.

The President then called upon the nominating committee, consisting of Holmes, McGann, and Seaver, whom he had appointed some time ago to nominate officers to be voted on at this meeting. The following were nominated and unanimously elected: President, Robert L. Williams; Vice-President, Philip W. Moore; Secretary-Treasurer, Guy C. Peterson; Assistant Secretary, Theodore H. Taft; Class Representative on the Alumni Council, Theodore H. Taft.

It was voted that the Council Representative nomination should be reported to the Alumni Association for approval by the Council, so that, if Willard W. Dow were allowed to continue as representative, Taft should act as substitute pending Dow's return from St. Louis.

Joe Evans was then called upon by the President to present to Bob Williams a beautiful watch, which was a gift of the Class in appreciation of Bob's indispensable work as Secretary of the Class for so many years. Joe spoke eloquently of our high regard for Bob and of our pleasure in now electing him as our president. Bob acknowledged the gift appreciatively and was thereupon invited by retiring President du Pont to assist him for the rest of the meeting.

President du Pont called upon Bill Vermilye, Phil Moore, and John McGann for brief talks which were much appreciated by all present. The President also asked Nat Patch and Henry Chambers for a duet. No one present admitted that he could play the piano which had been provided for the occasion, however, so we missed the duet. Request was made that the dereliction should be made up at the time of our next reunion. Both Patch and Chambers did thereupon make some very interesting remarks.

Our new Secretary, Guy Peterson, made some appropriate remarks relative to his hopes for the future welfare of the Class as a whole and particularly as to those at the reunion. A unanimous vote of appreciation for his services was given the retiring Secretary, Roger W. Wight.

Reference was also made to the difficulty which had been experienced by the solidarity committee named at the thirty-fifth reunion to prepare some register or record of the Class. The Secretary reported that such a register arranged alphabetically and geographically had been prepared but had never been published, because of apparent lack of interest. The register has been mentioned from time to time in class notes and in the annual class letters. Asher Weil, who is the president of the Electro-Sun Company, Inc., of New York City thereupon offered to print the register complete, and his offer was gratefully accepted. The Secretary agreed to arrange to make certain that the lists were corrected to date and to send them to Weil for reproduction. Asher also agreed to prepare photostats of the Secretary's menu card, which had been autographed more or less legibly by all of those present. The meeting closed at about eleven o'clock, but continued in smaller groups for some time thereafter.

The next day being Sunday (June 8), some members went out to play golf, but twenty-seven were present at noon when the class photo was taken rather success-

1901 Continued

fully, practically all of those there looking but very little, if any, older than they did five years previous.

After the photograph we all retired to the grill room where we enjoyed some liquid hospitality through the courtesy of Lammot du Pont, and Hildreth very eloquently recited a poem entitled "The Bull Moose Mine."

Following luncheon, or early the next morning, most of those attending the reunion departed, but a number met again at the Alumni Dinner on Monday night. Those present included two who did not attend the reunion at Swampscott, namely, Victor Sammet and Bart Schlesinger. The others who attended that dinner were Dubois, Farnham, Lange, Moore, Robinson, Stearns, Taft, Wight, Williams, and Wood.

As always, the Alumni Dinner was an hilarious affair, and whether or not those present consumed any beer, everybody carried home his stein as a suitable souvenir of the occasion.

As Roger Wight handled all matters at the reunion and kept a record of the proceedings at the business meeting, he was asked to furnish some data upon which to base the class notes for this issue of The Review, and he responded by writing the entire article which appears here. This method of furnishing data has the enthusiastic approval of the new Class Secretary. — GUY C. PETERSON, *Secretary*, 788 Riverside Drive, New York, N.Y. THEODORE H. TAFT, *Assistant Secretary*, Room 3–266, M.I.T., Cambridge, Mass.

1902

Charles Kellogg has returned to the Edison Electric Institute after an interval as chief consultant on electrical power with the Office of Production Management in Washington. His broad knowledge of the electrical power resources of the country made him of particular value to the government. Kellogg's daughter, Nancy Howard, was married to Robert Cabeen Lea, Jr., on May 31 at Queen Anne, Md. — Another marriage of interest to our Class is that of Lowe's daughter, Margaret P., to Burton H. Etherington of Philadelphia on September 20. — Charlie Shedd wrote that his daughter, Elizabeth, was married to Walter H. Hagen, on December 26, 1939, and that she is now in Charleston, S.C., where Dr. Hagen is serving at the army hospital.

A letter has been received from Robbie: "At last we have put out from our harbor of refuge, where we hove to in order to escape the troubled waters and treacherous shoals which threatened to engulf us, and we are headed into the open sea of hope, with all sails set, pennants flying at the masthead, a fair wind astern, on an even keel again, and with complete trust in our compass of destiny, for at 12:01 A.M. on the morning of July 1, we became privileged to continue our business as McKesson and Robbins, Inc. And after about three months of intensive application in connection with certain re-organization requirements for which the insurance department was responsible, I am able to emerge from the hold, walk the deck again with steady legs, get the smell of bilge water (memories of December, 1938) out of my nostrils, and breathe again the pure air of freedom along with 6,500 other optimistic McKessonites. Incidentally I have wound up with a title of assistant vice-president. A friend of mine wrote me this title may mean more 'vice' than 'president,' but at any rate the job goes on just as before.

"Are you beginning to think about our great class reunion which should be held next year? Between the last War and the depression, some of our reunions fell on parlous times. Let us hope that the world situation will have sufficiently cleared so that we may have a big event."

We learn from Patch that as he has swung around the great circle he has also been talking the reunion over with the members of our Class. One hundred and eighty-six post cards or letters were sent during the first week of September to members of the Class to find out if you are interested in meeting at the Oyster Harbors Club next June, as in 1937. From the response received in the short time since the cards went out, indications show that our fortieth will be the largest yet.

Several changes of address have been received: Les Millar is now at 220 East 42d Street, New York, representing the Connecticut Hard Rubber Company. Lester Hammond is at 2 Beekman Place, and Julius Alsberg at 21 East 10th Street, New York City. John R. Morse has moved to 1219 Marlowe Avenue, Lakewood, Ohio, and the Reverend Philip C. Pearson has a new flock at Norwich, N.Y., with 9 Eaton Street as his address. Paul Weeks is now at 406 Edmonds Building, Washington, D.C., with the Caterpillar Tractor Company, as in the past.

Arthur F. Butler died on May 19 in Beverly, Mass. For the past twenty-five years he had been associated with the Tenney interests at the Beverly Gas and Electric Company and the Terminal Coal Company in Salem, where he was working at the time of his death. His widow, Elizabeth B. Butler, and a son, David, survive him.

Alumni Day last June saw but a small gathering from our Class: Ned Baker, Bassett, Hunter, Lewis Moore, and Patch. Next year, with our reunion coming the week end before Alumni Day, attendance should be much larger.

Adrian Sawyer is Class Agent for the Alumni Fund, and '02 men should get in touch with him in order to keep up the class standing. Yearly subscriptions to the Fund will take the place, in the future, of special drives and so on. The Fund offers a way in which each can contribute as suits his means. — BURTON G. PHILBRICK, *Secretary*, 246 Stuart Street, Boston, Mass.

1903

These notes date back to June, when we tried to get a crowd for a class dinner the Saturday night before Alumni Day. Fourteen members signified their intention of attending, but only six of these appeared: Ball, Myron Clark, Gould, Howes, and your Secretaries. In addition, Ancona and King reported for dinner, and Joyce looked in for a few minutes afterward. Ralph Howes and Sidney Ball were two new and very welcome additions to the regulars. Howes had not been back to Tech for twenty-six years, and Ball for over thirty years. Ball unfortunately had to leave Boston the next day, but Howes stayed through the dinner on Alumni Day. The luncheon on Monday noon was attended by the rest of us who were at the class dinner, and we were joined by Aldrich, Danforth, George Greene, Mrs. Gould, and Mrs. King. That night, Aldrich, H. F. Bell, Danforth, Denham, Gould, Howes, and King attended the big dinner at the Hotel Statler.

If you haven't sent in your contribution to the class treasury for 1942, please help us out. We don't call for help very often or in large amounts, but expenses for notices and postage occur annually, and the treasury is getting low. When you send your contribution, include a note about yourself or a classmate which can be passed along to the rest of the Class through The Review. We have received several notes that way already. For example, we learned that Ackerman is a lieutenant colonel of civil engineers in the United States Army at the Engineer Replacement Centre, Fort Belvoir, Va.; that Hewitt Crosby is in the Navy Department at Washington, D.C.; that Potter was given the Lamme Medal for achievement in engineering education by the Society for the Promotion of Engineering Education at the University of California meeting in June; and that Pulsifer has been secured by American Metal Treating Company of Cleveland, Ohio, to strengthen the technical side of its expanding business.

Pulsifer has been active in local metallurgical work and education for more than fifteen years. He has published three small books and more than fifty technical papers. He has been instructor in the metallurgy of iron and steel at John Huntington Polytechnic Institute since 1936. His professional memberships include the American Chemical Society, the American Institute of Mining and Metallurgical Engineers, the American Society for Metals, and the Institute of Metals in London. Pulsifer expects to continue his teaching and consulting activities, but his major interest will be with the American Metal Treating Company, which is enlarging its plant facilities and establishing an up-to-date laboratory. — FREDERIC A. EUSTIS, *Secretary*, 131 State Street, Boston, Mass. JAMES A. CUSHMAN, *Assistant Secretary*, 441 Stuart Street, Boston, Mass.

1904

In spite of the disturbing happenings in the world, I hope all readers of these notes found some measure of pleasantness and happiness last summer.

As I walked about the Institute on Alumni Day, I found Mert Emerson, Gene Russell, and one or two other class-

1904 Continued

mates whose names escape me now. At any rate, Mert and I witnessed all the dedications and unveilings of portraits, and then we rushed to the University Club, where we were joined by Bouscaren, Fellows, Ferris, Munster, and Gene Russell for an hour's gathering before we left for the Hotel Statler, where we were joined at the Alumni Banquet by Hayward, Doc Moore, Parker, and A. D. Smith.

The annual reunion of the Class was held at Boxwood Manor, Old Lyme, Conn., on June 27, 28, and 29. The gathering got under way as usual with lunch at the University Club at noon on Friday. Those present were Comstock, Fellows, Ferris, Munster, Parker, Rockwood, Gene Russell, Stevens, and Sutton. After a couple of hours, all but Rockwood and Comstock left for Old Lyme, where we arrived by six o'clock.

The wisdom of shifting the reunion from Cape Cod to Old Lyme has been proved by the attendance at the past three affairs. There is not much to write about the happenings at the reunion. Suffice it to say the weather was wonderful, golf was played by enthusiasts in the sport, the evening gatherings were especially enjoyable, and everybody present had a grand time throughout. There were twenty-two classmates present and three brought their wives. The roster read as follows: Cobb, Jack Draper, Mert Emerson, Fairfield, Fellows, Ferris, Galusha, Haraden, Haynes, Hiller, Holcombe, Charlie Hoy, Kendall, Langley, Munster, Parker, Peiler, Read, Gene Russell, Stevens, Sutton, and Tripp. The ladies present were Mrs. Hoy, Mrs. Langley, and Mrs. Tripp.

On the way back on Sunday, the Boston contingent spent a very pleasant time at Al Read's home in Pawtucket, R.I. — Currier Lang was unable to get to the reunion. He had just purchased a 125-acre farm near West Stockbridge, Mass., and at the time of the reunion was engaged in getting things in running order.

The following clipping, dated May 31, from the Phoenix, Ariz., *Mining Journal* tells us about Ralph Hayden: "Ralph Hayden, a millman with a long and varied experience, has been named mill superintendent of Walker Mining Company's 2,300-ton plant at Walkermine, Plumas County, California. He succeeds M. R. McKenzie, mill superintendent for the company since 1924, but who recently retired and is now living at Vallejo, California.

"Hayden was born in Cambridge, Massachusetts, in 1882. He attended the Massachusetts Institute of Technology, and following his graduation in 1906, he served as laboratory assistant in the mining department of that institution for one year. In 1907 he became affiliated with Anaconda Copper Mining Company, Butte, Montana, and remained with that organization until 1917. His experience there consisted of one year as testing engineer, four years as assistant superintendent of the mill, two years superintendent of slime plants, and three years as superintendent of regrinding and flotation units. The following 16 years were spent with the Quincy Mining Company at Hubbell, Michigan, where he held the position of superintendent of stamp mills. In 1933 he engaged in private business, following that with a year as research associate civil engineer. Hayden joined the Walker Mining Company in 1935 as assistant mill superintendent, holding that position until January 1, 1941, when he received his present promotion."

On September 6, Mary Leslie, daughter of Mert Emerson, was married to Thomas Bennett Mechling, a lieutenant in the United States Army. The military wedding took place in the Fort Myer Chapel, Fort Myer, Va. Lieutenant Mechling was graduated from the United States Naval Academy, and after teaching at the Academy transferred to the United States Army and was commissioned in the Coast Artillery in June, 1941. He and his bride will live at Fortress Monroe.

Maurice C. Tompkins died on June 17. We shall all miss Tompy's jovial presence at future reunions. — HENRY W. STEVENS, *Secretary*, 12 Garrison Street, Chestnut Hill, Mass. AMASA M. HOLCOMBE, *Assistant Secretary*, 4817 Woodway Lane, Northwest, Washington, D.C.

1905

Since questionnaire replies indicated that a week-end reunion at Old Lyme would be impossible on account of the demands and uncertain schedules of defense-work programs of many class members, '05 decided to attempt a small-scale get-together in Boston on Alumni Day. This thirty-sixth reunion was as satisfactory as any substitute or synthetic arrangement could be. As usual the presence of a couple of never-before reunioners helped glorify the occasion. Harry Kendall, all the way from Portland, Ore., looking like a man of thirty, made his first reunion appearance and entertained with stories of his life and reminiscenses of the good old days of 1901 to 1905. Mitchell Mackie from Milwaukee, looking almost as youthful as Kendall, confessed to (perhaps we should say bragged about) having nine grandchildren. That undoubtedly earns him the title of champion grandfather. Or does it?

The others were the old reliable iron men reunion attenders of the Class. At the '05 table at the luncheon in Du Pont Court were Babcock, Barrier, Buff, Charlesworth, Chesterman, Danforth, Mr. and Mrs. Andy Fisher and guest, Gammons, Mr. and Mrs. Fred Goldthwait, Guibord, Harvey, Kendall, Kenway, Mackie, McLean, Marcy, and Mr. and Mrs. Sam Shapira. — Jim Fouhy, Bill Green, and Doc Lewis were observed walking around the corridors, but they were evidently too busy to eat. Browsing around the buildings and grounds, attending Class Day, and visiting professors and exhibits made up the program for the afternoon, with a gathering at Pete Harvey's suite at the Hotel Statler at 5:30 P.M. for a glorious cocktail hour. Pete was the same old wonderful host. Balkam appeared out of the nowhere to shake hands he had not grasped for thirty-five years, although a lifelong Boston suburbanite.

Most of the boys reluctantly descended to the ballroom for the Alumni Dinner and had another grand time. Sam Shapira proudly brought over his son, Norman, who was being graduated the next day. Norman left immediately for the service, in which he had been commissioned a second lieutenant in the Reserve Officers' Training Corps chemical warfare unit. He was enthusiastically voted an honorary member of '05. There were fifteen present from the Boston section and five from New York and west.

The reunion questionnaire brought bits of news from a few men, not enough to gladden your reporter's heart, but nevertheless welcome. Frank Drake wrote from 412 Washington Street, Reading, Pa.: "My position is the same as it has been the last four or five years; my work is the same; and the company is the same, although the name has been changed to Atlantic Utility Service Corporation from the old Utility Management Corporation. I am the operating gas consultant and engineer for the system, and with the number of plants under my supervision, running from the Canadian border to Florida and Louisiana, and from Illinois to the Atlantic seaboard, I am kept busy. Last year I traveled some thirty-two thousand miles and spent half of my time away from home. You mentioned retiring. All I can say is I am thankful my answer is no, for I do not know what I would be able to do to occupy my time after retiring. Travel is interesting, but you cannot do that twelve months in the year.

"As to my family, my older daughter was graduated from Wellesley College in 1935, following in her mother's footsteps, and she is now married to a promising young physician of Toronto and is living in that charming city. He is teaching at the University of Toronto as well as practicing medicine. His father was professor of geology and paleo-ethnology at the university. My son, Francis E., Jr., was graduated from Columbia University school of engineering in 1937. He is foolish enough to follow his father, going into the utility industry, and is now located in Rochester as an electrical engineer in the distribution department, although his work is not confined to that specific phase of activity. Our younger daughter has successfully finished her sophomore year at Wellesley. The first and only Mrs. Drake is still very much on the job. . . ."

Russell Willson, I, Rear Admiral, was in February appointed superintendent of the United States Naval Academy at Annapolis. The following newspaper write-up will interest his old Technology friends: "When the then Comdr. Willson deployed the destroyer fleet around Greenland and Labrador, shepherding home the Army world flyers in 1924, we were stalking Capt. Donald MacMillan, the explorer, in the sub-Arctic, and found gracious hospitality on the commander's destroyer, *Lawrence*, at Indian Harbor, Labrador. He's an alert disciplinarian,

1905 Continued

without being in the least stiff-necked about it. When we began issuing the 'Labrador Gumdrop,' the sprightliest piece in it was written by the commander.

"He is tall, grave, slender, distinguished in appearance, deliberate in speech, but quick and precise in action. The latter became clear when a black squall socked the *Lawrence* one day, with almost the suddenness of an explosion. With a rockbottom under Indian Harbor, the ship had nothing to get her hook into. She started slithering and spinning like a Japanese dancing mouse. The shore was rocky and the chances for a crack-up looked fairly good. The commander's job was something like chauffeuring a skidding automobile. We aren't sufficiently nautical to tell what happened, but he brought the ship through top-side up. A young lieutenant told me later that it was a brilliant piece of seamanship. Under a generous naval lease-lend plan, we borrowed the commander's fishing tackle and shotguns, to shoot puffins. We won the war and returned the armament. He, as one would have known, moved smoothly on up through grades to the post of rear admiral.

"He was born in Sardinia, N.Y., in 1883, put in two years at the Massachusetts Institute of Technology. In the World War he commanded the Sixth Battle Squadron of the Grand Fleet. He holds the Navy Cross, the Victory Medal and the Vera Cruz Medal. Unfortunately, there is no file of the 'Labrador Gumdrop,' but I remember that the last issue was a heartfelt tribute to Commander Willson."

Here's an old story with a fresh cover about our old airplane wizard, Harry Atwood: "Thirty years ago Atwood, an engineer fresh from the Massachusetts Institute of Technology classrooms, made an unprecedented nonstop flight from New London, Conn., to Boston — approximately 90 miles. It was an aeronautical sensation. Today he lives in a turreted house on a spur of the White Mountains and follows the bent of his creative mind in his laboratory.

"Sandwiched in those years is a thrilling story of an experimental scientist and a life dedicated to aviation. On the eve of this war, Atwood in his mountain retreat was experimenting with a formula for producing a superior type plastic wood. Out of his laboratory came a complete, easily carried, airplane wing of pressed wood. He dumped it into his empty swimming pool and left it there through a rigorous New England winter, through a rainy spring and a burning summer. When Atwood lifted the wing out of the pool a year later, it was as sound as the day he threw it in — not a sign of warping. Visitors were invited to jump on the wing surface, to strike it with a sledge-hammer, and abuse it any way they saw fit. The wing withstood the most violent assault.

"Then came the war. Military men sought planes and more planes. Workmen stood at their machines ready to roll out aircraft in mass volume. It was then Atwood flew to Washington with his blueprints. He assured defense experts that, given tools and machines, he could stamp out standard pursuit trainer planes as fast as a toy factory rattles out tin soldiers. Somehow Atwood was lost in the shuffle. Perhaps his plane, designed for pleasure flying, could not be adapted in a period of swiftly changing military design. Perhaps Atwood's idea was overlooked or dismissed as too experimental. Then too there was one structural weakness. The Atwood plane can take more abuse than a metal plane of its size. But once damaged, it can't be repaired. If a wingtip shears off, the entire moulded assemblage has to be scrapped. But after the war is over and the day of the family plane arrives, Atwood's plane may become the 'lumber-lizzie' of the air. The tall, spare inventor believes that his plane can be manufactured and marketed for about half the cost of the average automobile."

Dow H. Nicholson, I, a lieutenant commander in the United States Navy, is now inspector of naval petroleum and oil shale at Casper, Wyo. Bill Green is reported as having been commandeered by the Boston Woven Hose and Rubber Company in Cambridge to work out some mechanical problems in connection with defense work. Grove Marcy has been with the same organization for some time.

John H. McManus died in Kingston, N.Y., on September 6. The following obituary appeared in a Kingston paper: "John H. McManus, Sr., 59, of 82 Johnston Avenue, former chief of the Bureau of Claims of the Board of Water Supply of New York City, died . . . after a long illness. Mr. McManus had retired in February, owing to ill health, after rounding out almost 35 years of continuous service with the Board of Water Supply.

"Born in Boston where he received his early education, Mr. McManus in 1905 graduated from the Massachusetts Institute of Technology, where he had studied sanitary and civil engineering. He taught there for a year, and on June 13, 1905, received his original appointment with the Board of Water Supply. He was assigned to the reservoir department. . . . From 1906 until 1913, Mr. McManus was engaged in construction work, first in the West Hurley section on the Ashokan reservoir, and later at the Olive Bridge dam during the most important stages of the work there, and later at the headworks at Browns Station. . . .

"While at Browns Station, Mr. McManus helped in the construction of a section of the Catskill aqueduct. . . . While on construction work he also aided considerably at odd times in the preparation for trial of various claims against the city of New York, and as a result of his transfer to the newly organized Bureau of Claims . . . in the early part of August, 1913, . . . was appointed chief of the bureau on February 1, 1919. . . .

"Surviving are his wife, the former Miss Mary C. Cusack; four sons, John H. Jr., Thomas C., and Edwin C. McManus, all of Kingston, and Charles A. McManus of Quincy, Mass., and a daughter, Miss Mary C. McManus of this city."

Chester A. Butman, with the Class for a short time, died on June 21, 1930. — George Jason, Jr., VI, died at his home in Cohasset, Mass., on July 23. — FRED W. GOLDTHWAIT, *Secretary*, 274 Franklin Street, Boston, Mass. SIDNEY T. STRICKLAND, *Assistant Secretary*, 137 Newbury Street, Boston, Mass.

1906

The thirty-fifth reunion of the Class was held at the Eastern Yacht Club, Marblehead, Mass., on Friday, Saturday, and Sunday, June 6 to 8, inclusive.

The Secretary drove to the reunion with Ned Rowe and Cy Young, arriving in time for dinner on Friday night. The following had already checked in at the Club: Mr. and Mrs. Harold Coes, Floid Fuller and his son, Henry Ginsburg, Dan Kelley, Bob Lyons, and Mr. and Mrs. Halsey Philbrick.

Before we retired on Friday night, the party had been increased by the addition of Herbert Ball, Frank Benham, Stewart Coey, Henry Darling, Michael Gibbons, and Jack Norton. The evening was spent in reminiscing and in playing bridge. One talk fest — an animated discussion about the war — is reported to have lasted far into the night.

Saturday morning the golfers went to the Salem Country Club to practice for the class championship. George Guernsey joined them at the Club. In the meantime, others arrived at the Yacht Club. Those arriving Saturday were William Abbott, Otto Blackwell, Sherman Chase, Bob Clark, Ralph Clarke, Mr. and Mrs. Thomas Hinckley, Burton Kendall, Andy Kerr, Ralph Patch, Abe Sherman, Allyn Taylor, and Mr. and Mrs. Malcolm Wight.

Joe Santry, who was really godfather of this reunion and was responsible for its being held at the Eastern Yacht Club, very thoughtfully arranged a boat trip for the crowd on Saturday afternoon. The golfers and sailors re-assembled in time for the reunion banquet, which was held at 7:00 P.M. at the club.

Contrary to our usual practice, the banquet was open to classmates only, and the ladies at the reunion had a special table in the main dining room. The ladies present were the wives of Breitzke, Coes, Ginsburg, Hinckley, Philbrick, and Wight.

There were thirty-five classmates present at the dinner, which was the outstanding affair of the reunion. Besides those already listed, Charlie Breitzke, Clarence Carter, Walter Clifford, William Farley, Carroll Farwell, Bill Messenger, and Sherley Newton were present. Floid Fuller and his son missed the dinner as they had to leave early.

Joe Santry called for a show of hands so that he could separate the sailors and the golfers, and, after finding out the approximate number of sailors, he ininvited them all to a cruise on Sunday. — Letters were read from classmates unable to attend the reunion, and a trophy, emblematic of the golf champion-

1906 Continued

ship he won at the thirtieth reunion, was awarded to Allyn Taylor. — The trophy for coming the longest distance was awarded to Bob Clark, who came from California. — After the dinner Henry Ginsburg showed some of his beautiful, colored moving pictures.

Sunday morning the golfers rose early and went to the Salem Country Club to settle the class championship. As your scribe was included in that number, he not only missed the boat trips but now feels very helpless in reporting them for these notes.

Nine intrepid divot diggers participated in the class championship matches, with the following results: first gross, A. C. Taylor, 92; second gross, G. R. Guernsey, 97; first net, G. R. Guernsey, 74; and second net, J. F. Norton, 81. As no player was entitled to two prizes, Guernsey was awarded the first net of 74 and the second gross prize went to Frank Benham, with a 99. The golfers returned to the Club ahead of the sailing parties and were enjoying luncheon on the porch when the yachtsmen appeared. — The latter were very enthusiastic about the cruises, of which there were two — one on a sixty-foot yawl and the other on a powerboat. These trips were certainly a great addition to the reunion, as they afforded an opportunity to enjoy a sport quite out of the ordinary for some classmates.

Sunday afternoon Fred Batchelder and W. L. Rowell showed up and were welcomed by all. — Along toward sundown the classmates began to leave, and, when the Secretary drove away about six o'clock, practically all had gone except Mr. and Mrs. Coes, Mr. and Mrs. Ginsburg, and a few others who were so attracted by the beauties of the spot that they stayed Sunday night.

The Secretary took some kidding from the ladies present, as the reunion notice was not a very enthusiastic invitation for them to attend. The Secretary has learned the error of his ways, however, and future reunions will be open without restrictions to the ladies.

In conclusion, we can truthfully state that all classmates who attended the reunion were unanimous in agreeing that it was one of the most successful ever held, and everyone felt that great credit was due Joe Santry for his efforts in bringing us to Marblehead and for arranging the sailing parties, which were the crowning features of the week end.

The following item was sent to us by Charlie Locke '96: "Ray J. Barber has found that it is not feasible to carry on his mining operations in Alaska this summer, and therefore, instead of going to Alaska he has taken a house at 4428 Mariota Avenue, Toluca Lake Station, North Hollywood, Calif., where he is engaged in defense work."

The Boston Sunday *Herald* of September 14 contained the following notice which will be of interest to classmates: "Mr. and Mrs. Henry A. Ginsburg of Harvard Street, Cambridge, announce the engagement of their daughter, Miss Irene Ginsburg, to Mr. Neil J. Dushan, son of Dr. and Mrs. Sidney S. Dushan of Dorchester. Miss Ginsburg is a graduate of the Leland Powers School of the Theatre, and Mr. Dushan of the School of Pharmacy."

The following notice, dated May 20, came from the Boston News Bureau: "Nugent Fallon, whose appointment as president of the Federal Home Loan Bank of New York was announced, . . . is a native of Boston. . . . In recent years he has been stationed at Washington as general manager of the Federal Savings and Loan Associations.

"After leaving M.I.T., Mr. Fallon became associated with the Boston Elevated Railway, eventually becoming a superintendent. Later he entered the banking business and for a number of years was associated with the First National Corporation of Boston and New York and the French-America Banking Corporation of New York. During the World War, Mr. Fallon was a lieutenant commander and pilot in the United States Navy and Air Service. He was attached, first, to the French Army and later to the British Air Force. . . .

"His hobby last year took definite form in his acquisition of a large power cruiser, on which he spent most of his vacation. The bank he now heads serves 393 member institutions in the Second Federal Home Loan Bank District, comprising New Jersey, New York, Porto Rico, and the Virgin Islands."

Dr. Harold Vinton Coes, Jr., was married on Saturday, June 14, to Eleanor Hart Gies of Upper Montclair, N.J. — The Assistant Secretary's son, Edward B. Rowe, Jr., '36 was married to Lelia Anne Munce on Saturday, September 20, at All Saints Episcopal Church, Richmond, Va. E. B., Jr., is a graduate of the Course in Naval Architecture and Marine Engineering at the Institute and is helping to build a two-ocean Navy at Newport News, Va.

The Secretary regrets to report the death of Harry C. Merriam, 56, of Canterbury Road, Newton Highlands, on Friday, June 27. Harry leaves his wife and two daughters. He was a chemical engineer and a member of the Marquette, Mich., Masonic lodge.

The following obituary appeared in the Cincinnati, Ohio, *Enquirer* of May 19: "Robert Henry Doepke, son of one of the founders of the Alms and Doepke Company and himself an executive officer of that firm, died of a heart attack shortly before noon yesterday. He was stricken when working in the garden at his home, 2137 East Hill Avenue, Walnut Hills.

"Mr. Doepke was 57 years old. He was born in Cincinnati, a son of Mrs. Leonora S. Doepke and the late William S. Doepke, one of the founders of the department store which bears his name.

"Educated in Cincinnati Public Schools, Mr. Doepke was graduated later from an Asheville, N.C. college. For several years he attended Mass. Institute of Technology. On his return to Cincinnati in 1905 he became an executive officer of the Alms and Doepke Company, remaining associated with the firm until his death. Throughout his life, Mr. Doepke was active in civic affairs, taking special interest in the development of Central Parkway. In 1920 Mr. Doepke married Miss Trenetta Fox of Birmingham, Ala. who survives him." — JAMES W. KIDDER, *Secretary*, Room 802, 50 Oliver Street, Boston, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills, Mass.

1907

In response to my letter of sympathy written to the widow of Albert S. Kendall, who died on May 13 (see July Review), I received the following note from Anne M. Kendall, his daughter: "My brother and I are very grateful for your letter. I am writing for my mother, who is in the hospital, unable to realize our loss. Our father was so strong and busy a person that a long illness would have been an even greater torment than for someone less active. I am not comforted, particularly, by such a reflection, nor do I find solace in the thought that my own relationship was that of deep friendship which often arises peculiarly between father and daughter. The sympathy of my father's friends is far more real, and I am sure that you understand how grateful we are to his friends and how anxious we are that they should be ours."

James Reed, XIII-A, died from coronary occlusion at noon on July 23, having become ill very suddenly on the evening of July 20. Born at Ashtabula, Ohio, on October 29, 1881, Reed was graduated from the United States Naval Academy in 1902 and served at sea as a midshipman and ensign for two and a half years. He was sent to M.I.T. for three years in the Course in Naval Architecture and Marine Engineering and was graduated with the degree of master of science. For three years he served as shop superintendent at the Philadelphia Navy Yard, and in 1910 was put in charge of steel inspection for the Navy in the eastern area. In 1911 Reed served the United States Department of State in furthering American trade in South America, and in 1912 and 1913 he was assistant director of public works in Philadelphia, loaned by the Navy at the request of Mayor Blankenburg.

From 1915 to 1920, following special duty in Mexico in 1914, Reed was superintendent of construction at Mare Island Navy Yard in San Francisco, where 8,000 workers were employed. He supervised the building of the battleship *California*, tankers, troopships, subchasers, fourteen destroyers — including the U.S.S. *Ward*, whose time spent on the ways, seventeen days from keel laying to launching, is a record that has never been bettered. For the next two years he was assistant to the president of Los Angeles Shipbuilding and Drydock Corporation and then engaged in private consulting practice for three years.

From 1925 until 1929 Reed was general works manager for the Celite Company, now a division of Johns-Manville Corporation, and during the next four years was general manager of Schlage Lock Company in San Francisco, serving as a member of the city planning commission

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for a year of this period. From 1933 to 1937 he was general manager of the Golden Gate Bridge and Highway District at San Francisco, being directly in charge of engineering, finance, and construction of this, the world's greatest suspension bridge.

In 1937, at the insistence of classmate Jerry Land (Rear Admiral Emory S. Land, now chairman of the United States Maritime Commission), Reed made a special comprehensive survey of shipbuilding and its personnel on the Pacific Coast. From 1937 to 1939 he headed the Association of San Francisco Distributors, about two hundred firms engaged in warehousing, distributing, and wholesaling. The organization handled all industrial relations for its members, who employed some 12,000 persons.

On September 12, 1940, Reed was made president of the Cramp Shipbuilding Company at Philadelphia, the position he occupied at the time of his death. He is survived by his widow, to whom I wrote a note of sympathy, and who gratefully acknowledged it; and by his son, James Reed, Jr., who is with Blyth and Company, Inc., 14 Wall Street, New York City. Mrs. Reed lives at the Kenilworth Apartments, Germantown, Philadelphia, Pa.

Men of our Class who were present at the luncheon on Alumni Day last June 9 were Ed Moreland; Ralph Hudson; Octavus L. Peabody; Charlie Allen; Lawrie Allen and his wife; Tom Gould; Parker Dodge from Washington with Mrs. Dodge '16 and one of their sons, Austin, who is a sophomore at Technology this year; Leverett Cutten from Allentown, Pa., with his son, William K. '39, who received his master's degree last June at the Institute; Bryant Nichols; and Stuart C. Godfrey (now a colonel in the United States Army, being engineer for General Headquarters Air Force at Bolling Field, D.C.) with his wife, daughter Dorothy, fourteen-year-old son Pearce, and son Charles Stuart '40, who received a master's degree in mechanical engineering at the Institute last June. Incidentally, I noticed in the latest edition of the Technology bulletin that Stuart is a member of the Institute's Corporation Visiting Committee on the Department of Civil and Sanitary Engineering. The evening banquet on June 9 was attended by all of these men except Gould, and also by Alexander Macomber, Don Robbins, and George Crane.

Last June, in reply to my letter, I was delighted to receive a fine message from Arthur K. Tylee, whose residence address is 150 Argyle Avenue, Ottawa, Ontario, Canada, and whose business address is Department of Munitions and Supply, 70 Lyons Street, Ottawa. He is supervisor of overhaul and repair in the aircraft branch of the government service. Since 1907, with the exception of about five years spent in military life, Arthur's business connection has been with the George T. McLauthlin Company of Boston, makers of elevators and special machinery. His experience has covered engineering, production, and installation of lifts, from dumb waiters to 100-ton car elevators; Metcalfe car dumpers for Montreal, Baltimore, and Kansas City; the $100,000 mechanical stage for the old Boston Opera House; and side lines such as portable steam engines, pulverizers, and power paper cutters. He is familiar also with machine design, machine shop practice, and the building trades.

Arthur saw extensive and intensive action during the first World War. In 1915 he became a lieutenant at the Curtiss Flying School in Toronto, and in 1916 he saw service with the 12th and 35th squadrons in England and France. He was in the hospital in August. Early in 1917 he became captain and flight commander. In March of that year, major in command of the 81st Canadian training squadron, he was in command at Camp Borden, Ontario, Canada, taking the personnel of the camp, five squadrons, to camp in Texas in November, 1917. In January, 1918, he took a staff course in England, and in April became a lieutenant colonel in the Royal Air Force and was inspector of training in Canada. He returned to England in March, 1919, and was demobilized on May 1.

Arthur, married in 1928, has no children. He writes: "Get busy everybody and work to win this war, or there won't be any more class reunions."

Mrs. Nichols and I were pleased to receive an invitation to the wedding of Hud Hastings' younger son, Lawrence, on June 21 in Cleveland Heights, Ohio. I wrote to Hud, who is a professor of economics at Yale University, expressing our appreciation of his remembering us, and asking him to tell me about his four children.

The oldest, Hudson B., Jr., now thirty-one, received his A.B. at Bowdoin College in 1934, majoring in economics. He has been employed by the General Electric Company at Bridgeport, Conn., since 1935, at present being sales representative in New England for the manufacturers' accessories division of that company. He was married in 1940 and lives in New Haven. The son who was married in June attended Brown University for three years, majoring in economics, and is now senior clerk with the Otis Steel Company in Cleveland, Ohio. Hud's older daughter, Margaret, was graduated from Mount Vernon Junior College, Washington, D.C., in 1939 and is now at home doing part-time secretarial and volunteer civic work. The younger daughter, Amy, is now a junior at Skidmore College, Saratoga Springs, N.Y.

Hud wrote: "Thank you for sending me the dates for our thirty-fifth reunion. I have already made a note on my calendar, and you may be sure I will be there if I am still standing on two feet." So here is a good spot in these notes to notify all of you '07 men that the reunion will occur next June 5, 6, 7, and 8 at the Oyster Harbors Club, Osterville, Mass., the same delightful place we went to in 1937 and 1932. Mrs. Nichols and I, with our younger daughter and her husband, greatly enjoyed luncheon at the club on September 6 as guests of Mr. Wannop, the manager, and I can assure you that the food, service, buildings, grounds, and atmosphere of hospitality are all tops. Follow Hud's example and mark the dates on your calendar. Promise yourself now that you will attend.

Through the courtesy of Charles E Locke '96, Alumni Secretary, I am able to give facts regarding Howard J. C. MacDonald, III, whose address is Mulberry Cove, Drayden, Md., where he has been living on a farm since he retired in 1936. From 1907 to 1908 he was mucker, miner, and timberman with the Square Set Gold Quartz Mine of the Quartette Mining Company at Searchlight, Nev. Then for about two years he worked underground in the 3,300-ton-a-day low-grade copper mines of Granby Mining and Smelting Company in British Columbia, being assistant to the mine superintendent. From 1910 to 1915 he was mine superintendent of the Northern British Columbia mines of the Granby Company at Anyox, Canada. During this period he put into life one of the largest copper mines in the British Empire by the examination and first report on the Hidden Creek prospect.

MacDonald had sole charge of the drilling and exploration of this prospect until it displayed ore reserves of over 20,000,000 tons, and of its underground development and the installation of machinery and equipment as well as the building of a mine plant and town to turn the prospect into a 4,000-ton-a-day mine. He also proved up another valuable mine, the Bonanza, on which a great deal of money had been spent without result, by finding a concealed ore body. He rehabilitated the Maple Bay Gold Mine and started up and operated lime and quartz quarries.

From 1915 to 1920 Mac was chief engineer for the Granby Company at the head office at Vancouver, British Columbia. His duties included administrative problems of the mines and smelters, analysis of cost of metals, investigation of metallurgical practices and concentrating mill design, reports on questions of corporation advance and procedure, and general guidance of the engineering of the company. He made explorations all along the northwestern coast of North America. He was chief engineer for the Granby Consolidated Mining, Smelting and Power Company, Ltd., at the time when it operated two smelters, a coal mine and coke plant, a steamship line, and gold and copper mines in western Canada and in Alaska.

From 1920 to 1928 Mac was a consulting mining and geological engineer in Vancouver; Casper, Wyo.; and Denver, Colo. For the next five years he worked under the five-year-plan in Russia, where he was manager of mines for Uralmedstroy, installing a new 4,400-ton-a-day copper mining plant in the Urals; was chief engineer for the State Planning of Mines at Moscow, making plans for mines of from 100 tons a day up to the huge Kounrad project for 100,000 tons of ore and rock a day. He had to select the right mining system for each ore body

1907 Continued

and was in charge of the realization of these plans for all the mines and prospects in Russia, both opencut and underground operations, and for various metals — gold, silver, lead, zinc, copper, iron, tin, and aluminum. He was also manager of Soviet nonferrous mines and concentrating mills, having charge of the construction of new plants, the operation of old ones, distribution of mining supplies, operating adjustments and improvements, mine inspection throughout the U.S.S.R., organization of mine staffs and workmen, and the establishment at Moscow of a systematized central mines office for the administration of Russian mills and mines.

An article in the Moscow *Daily News*, under the title, "Militant specialist wins tribute from commissar," said: "'Howard J. C. MacDonald has become a "Mecca" for all the men in the nonferrous metal industry,' declared A. P. Serebrovski on the occasion of the completion of MacDonald's five years of work in the Soviet Union on May 1, 1933. 'He came here as a highly qualified engineer whom we expected to use as a consultant, but his work showed such remarkable understanding of our problems that we turned over to him the executive functions that are ordinarily given only to Russians.'" From 1934 to 1936 Howard had offices in New York City as a consulting engineer, and then he retired to rural life.

The Rochester, N.Y., *Democrat and Chronicle* of July 26 contains a long article, with pictures, telling that seven thousand employees of the Bausch and Lomb Optical Company, who produce most of the "eyes" for national defense, had won the unprecedented right to wear the Navy's coveted "E," a United States Navy insignia which means well done. Also, the Rochester plant became one of the first fourteen in the country entitled to hoist the blue, red, and yellow flag of the Naval Ordnance Bureau. In ceremonies at the Washington office of Secretary of the Navy Knox, M. Herbert Eisenhart '07, president of Bausch and Lomb, received the award. In navy circles officers pointed out that this firm, almost singlehanded, has produced optical glass to meet defense needs since the first World War. More than half of the fire-control equipment for the nation's armed forces, including the huge range finders for the biggest battleships, also lenses and many scientific instruments and optical devices essential to ordnance, are produced by this firm of which our classmate is the very active head.

An article in the Middletown, Conn., *Press* of March 4 gives interesting facts regarding Lloyd R. Fredendall, who was our corps of cadets adjutant during our freshman year. Lloyd was at Technology only one year, and then went to West Point. He was with the first American combat battalion to land in France in 1917, and was one of the first four captains to receive temporary promotion to rank of major. His outstanding service in the front lines led to his promotion to lieutenant colonel and assignment to general headquarters staff under General Pershing. After the war he attended the infantry school at Fort Benning, Ga., and the command and general staff school at Fort Leavenworth. He has seen duty with the general staff at Washington, in the Philippines, at Fort McClellan, Ala., Camp Beauregard, La., on patrol duty on the Mexican border, at the Army War College, and at other stations.

On December 1, 1939, Fredendall was appointed brigadier general, and in the spring of 1940 he was relieved of his duties as chief of infantry of the division and made commanding general of the unit. In the fall of 1940 he was assigned to the "rolling 4th" with the rank of major general and was in charge of the Army's first completely motorized division, located at Fort Benning, and was commandant of the post. In the Boston *Herald* of July 17 was an item saying that on August 10 our classmate would become commander of the Second Army Corps, with headquarters at Wilmington, Del.

At the seventh annual convention of the Mining Association of Montana, held in Cooke City, Mont., on September 5 and 6, Carl Trauerman, who has been president all seven years, was in the chair and made his seventh annual report. He retired as president but was elected secretary-manager, a newly created office. In the Pacific Coast edition of the *Wall Street Journal* of September 8 is a three-column article by Carl, entitled, "Where Western Mining Dollar Goes," and also four shorter articles on the subjects, "Antimony," "Tungsten," "Manganese," and "Chromium."

Madeline J. Colvin, daughter of Percy J. Colvin, was married on July 3 in All Saints Episcopal Church, Worcester, Mass., to Thaddeus W. Miemiec of Chicopee, Mass. — Esther Nichols, younger daughter of the Class Secretary and Mrs. Nichols, was married on June 12 at the home of her parents in Auburndale, Mass., to Everett R. Ryder, Jr., of Somerville, Mass. Both of our daughters and two of our three sons are now married, and we have a granddaughter seven years old and a grandson four. All five of the sons and sons-in-law are happily connected with high-grade and sizable business firms in Boston and vicinity.

Roy W. Ryden, Rear Admiral, master of science in Course XIII-A in 1907 and Annapolis classmate of James Reed and Jerry Land, is now at 600 Chews Landing Road, Haddonfield, N.J. — Frank R. Vanderstucken is at 541 West 113th Street, Apartment 5-E, New York City.

Our class quota of contributions to the Alumni Fund, as assigned by the Fund Board, is $2,925. As of August 15, $1,918, or 66 per cent, had been contributed, as compared with 41 per cent on August 15, 1940. This is a creditable showing, being the highest percentage of quota attained by any class later than '97. Our class quota of contributors is 127, and on August 15, 1941, 79 men had given, or 62 per cent. This percentage may be compared with 43 per cent of August 15, 1940. The Classes of '03, '11, and '12, as well as many Classes prior to '97, have a better percentage showing than we have in this respect. Let me urge any of you who read this and who have not yet contributed to do so. Let us back to the utmost the splendid effort and enthusiasm of Lawrie Allen, our Class Agent for the Fund, and thus stand behind the carefully planned and administered program for alumni participation in the Institute's financial requirements. — BRYANT NICHOLS, *Secretary*, 126 Charles Street, Auburndale, Mass. HAROLD S. WONSON, *Assistant Secretary*, Commonwealth Shoe and Leather Company, Whitman, Mass.

1908

The first get-together dinner of the season will be held at Walker Memorial on Tuesday, November 18, at 6:30 P.M. Those who attended these dinners last season had a fine time, and we expect to make the gatherings even better this season. Make your plans to come.

The Class was well represented at Alumni Day last June. The weather, with the exception of a little wind, was perfect. Apparently the Alumni Association has influence with the weather bureau. — At the luncheon we had sixteen at our table: George Belcher, Bill Booth, Nick Carter, Lang Coffin, Cookie, Myron Davis, Toot Ellis and Mrs. Ellis, Pop Gerrish and Mrs. Gerrish, Ted Joy, Doc Leslie, Harry Lord, Linc Mayo, Henry Sewell, and Frank Towle.

Following the afternoon ceremonies most of the crowd, with the exception of Bill Booth, Doc Leslie, and the ladies, adjourned to the University Club for cocktails and then went on to the Hotel Statler for the banquet, where we found Henry Chandler from Montreal.

Charlie Steese, one of our regular attendants at Alumni Day, was unable to come, as he now makes his headquarters in Washington, where he is a colonel in the ordnance department of the United States Army. I was glad to get a letter from him: ". . . I left Boston on April 25 for duty in Washington, D.C., in the office of the chief of ordnance, as head of the ammunition supply division of field service.

"The ordnance department is divided into two large units — one procures the matériel, and the other stores, issues, and maintains the matériel. I am in the latter unit and am responsible for the storage, transportation, issue, and maintenance of the ammunition after it has passed its acceptance inspection and test. — If you have been reading the papers, you will have noted the billions being appropriated for ordnance. About a billion and a half have already been appropriated for ammunition, and at least that much more seems to be in prospect.

"I spent the first three months reorganizing the division and enlarging it to care for this amount of matériel, and I am now checking on sites for ammunition depots in the far west and to the east of the Rockies. We have a number of these depots under construction.

"I simply could not get back to Boston for the commencement period, and I certainly missed seeing you fellows after having been present at Alumni Day for

1908 Continued

five consecutive years. Give my best to everyone and come in to see me when you are in Washington. The office is on the second floor of the Social Security Building, 4th and C Streets, Southwest, or at least it was when I left."

Cookie has received several very interesting letters from classmates. Here is one from Walter Caldwell: ". . . I have not seen very many of the Class. For some reason Louisville seems to be off their line of travel. In April, Jimmy Burch stopped off for one evening on his way to Florida with his wife. He was here once before, soon after I attended his wedding in Dubuque, Iowa.

"I have been working for the W. E. Caldwell Company since graduation. I started as a draftsman, then became engineer, chief engineer, director, vice-president, and general manager. On my father's death three years ago I became president.

"There are several lines to the business, the principal one being the manufacture of tanks of wood and metal, including the elevated type of steel used for town and city water works. This work involves considerable engineering, though not the mill option in Course II that we took. We also have a machine department that makes friction clutches and other types of clutches. In this department we have been developing a new service that I find very interesting — that is, the design and manufacture of machinery for special purposes, where nothing now exists that will do the job.

"We recently designed and built an automatic film-development equipment. Undeveloped film is fed at one end, and the finished dried film is taken off at the other. The machine's capacity is forty thousand rolls of film a day. Another design is a pair of special saws and conveyors for trimming ends of oak flooring absolutely square without staining or marking. No available machine could do this. — We designed and built our own press for forming the curved bottoms of steel tanks. It will press an eight-foot circle with twelve feet in the clear. There are thirty-three cylinders, and the machine exerts one thousand tons' total pressure, working at two thousand pounds a square inch. One man at one valve operates it. This press involved some ticklish hydraulic problems.

"Right now we are working on an 85 per cent defense basis, furnishing equipment for the five or six defense plants located nearby, as well as many others. This work is not so interesting, as we are not told how the machinery is to be used. . . ." — The second generation of Caldwells is represented at Technology this fall in the person of Walt's son Gordon.

A letter came from Herb Elton, telling how sorry he was not to be with us on June 9. "'Life slips its tether' less and less, and that is too bad," he wrote.

Cookie, who is the Class Agent for the Alumni Fund, reports: "There are still thirty fellows who contributed last year who haven't sent checks this year. Those delinquents will hear from me soon. The Fund report as of August 15 shows '08 with 61 per cent of its quota of members already contributing for 1942. Not bad!"

Many fellows have included small notes when they sent their checks to Cookie. I wish they would be more fluent writers, as Cookie always hands over these interesting bits of news for inclusion in this column. Remember, '08 notes come out every other month.

Bill Given gave his life history in a few words: "I've been with the American Brake Shoe and Foundry Company for just over thirty years." As Bill wrote on president's stationery, his thirty years have not been badly spent. — Jim McGowan, vice-president of the Campbell Soup Company, wants to hear from classmates, but has made no contribution about himself to these notes.

George C. Lees, president and general manager of the United States Axle Company, Pottstown, Pa., says: "You can say that I am recovering from an illness and that I am happy to tell you that I am now on the upward trend." Best wishes, George, for your continued improvement.

Bill Adams of Shanghai was in Boston for a few hours last July, and Hap Ellis, Frank Towle, and your Secretary had a chance to visit with him at the Hotel Copley-Plaza. His information regarding conditions in China was very interesting. He planned to return to China about the last of July, if the boats were still running.

The Secretary also visited with Hobe Ferris in Boston last summer. Hobe had come east to do some sailing, and he looked as happy as ever. — Lang Coffin, who was under the weather a bit in the early fall, is recovering nicely.

From the Los Angeles, Calif., *Herald and Express*, we have obtained some information about the death of Leavitt Thurlow on March 11: "Leavitt W. Thurlow, prominent chemical engineer and father of Leavitt W. Thurlow jr., the former U.S.C. football end and baseball outfielder, died . . . of traffic injuries.

"Mr. Thurlow suffered a fractured skull . . . when his auto figured in a collision with another car at Lexington avenue and St. Andrews. . . .

"Mr. Thurlow . . . lived at 1710 Fifth avenue. His career was a colorful one and he spent more than 10 years in the Philippines at the practice of his profession.

"He was a Shriner and a Knights Templar. Mr. Thurlow is survived by his widow; his son, Leavitt jr., now in the United States air corps at Honolulu; and two daughters, Cecelia and Julienne. . . ."

From the Longview, Wash., *News* we received the following interesting item about C. A. Gibbons: "C. A. Gibbons, consulting engineer at the Reynolds' Metals Company plant for the Reconstruction Finance Corporation and a former supervising engineer on some of the largest public works projects in the nation, thinks the completion of the aluminum plant in Longview will be just another beginning step in Northwest industrial expansion.

"Gibbons has been stationed at offices of the Austin Construction Company to superintend the carrying out of the Reynolds' contract with the RFC. He has made his home for the past 12 years on Long Island, New York, and during the past six years has served as a supervising engineer with the Public Works Administration on such jobs as the $80,000,000 tunnel under the Hudson river to New Jersey, the $58,000,000 Queens bridge, New York, and the $30,000,000 Ward Island New York sewage disposal plant and sewage tunnel system.

"'There is a feeling prevalent all over the country that the industrial expansion of the Northwest will continue — and even increase — and the administration is expecting to see it continue at an even greater rate,' he said. . . . The establishment of this region as one of the major electric power centers will stimulate industry and create an expansion here in Washington.

"Supervising administration of the RFC's loan is Gibbons' first experience with aluminum — and his first job with the RFC. Since his graduation from Massachusetts Institute of Technology in 1908, the graduate mining engineer's work has taken him to Mexico, Canada, five South American nations and various parts of the United States. . . ."

We have the following new addresses to report: William E. Barton, 15 Oakwood Place, Delmar, N.Y.; Clifford H. Boylston, 4020 Montevallo Road, Birmingham, Ala.; G. Temple Bridgman, 333 Montgomery Street, San Francisco, Calif.; Henry H. Damon, 11 Richmond Road, Newton, Mass.; Commander Dwight Dickinson, Jr., Medical Corps, U.S.S. *Denebola*, care of Postmaster, New York, N.Y.; Charles A. Gibbons, Jr., 1619 22d Avenue, Longview, Wash; John J. Mullen, Post Office Box 596, Lakewood, Colo.; George W. Scott, 150 West 55th Street, New York, N.Y.; Colonel Charles M. Steese, Box 31, Mount Holly Springs, Pa.

Don't forget the class dinner on Tuesday, November 18. Try to send me some news. — H. LESTON CARTER, *Secretary*, 60 Batterymarch Street, Boston, Mass.

1909

At the Alumni Day last June our Class was represented by sixteen members, of whom eight came from out of town. B. Edwin Hutchinson, President of the Alumni Association, was there, as was Tom Desmond, Past President.

Kenneth T. Blood, Brigadier General, is in command of the Boston Harbor defenses, having been transferred from Washington, where he was an executive in the coast artillery chief's office. The appointment of such a high-ranking officer to the harbor defense post is said to be significant.

One of the most publicized members of our Class, Charlie Belden, was on the air last May on the Columbia network, Bob Edge's program. Last June, Charlie exhibited in New York several photographs which he had taken on his pronghorn antelope ranch in Wyoming.

1909 Continued

On July 1, Stew Pearce, as resident vice-president of the Massachusetts Bonding and Insurance Company, went to the Chicago office as head of the Illinois department of the company. Pearce had been at Tulsa, Okla., for several years.

Ben Pepper was appointed last June by the court as one of the trustees of the Nantasket-Boston Steamboat Company. The Nantasket boat line has the longest record of unbroken operation in the United States, having been running from Boston to Pemberton and Nantasket Beach since 1818.

John E. Otterson, who came to Technology from the Naval Academy, has been appointed co-ordinator of ship repair and conversion, operating under the offices of the Secretary of the Navy and the chairman of the Maritime Commission. He will keep records of available facilities and capacities of the various shipyards and of work to be done and the progress made, and will co-ordinate the work in each to avoid overcrowding some yards when others are not so busy.

William F. Jones passed away on May 9 after a long illness. Jones had been living at Wauwinet, Nantucket, Mass., where he made his home for the past seven years after he was forced to give up active practice as a geologist.

Mr. and Mrs. Paul B. Lord have announced the marriage of their daughter, Phyllis Boynton, to Peter Butler Bradley on July 5 at Woodmont, Conn. — George Wallis stopped at the office on one of his trips east from Chicago, and he told me that his daughter, Frances, who married Addison Sandford, has a new daughter, Carolyn, born last April.

Carl Gram wrote that Chet Pope drove over to Lancaster, Pa., from his farm in New Jersey to swap farming information and otherwise get up to date. Carl says his farmer neighbors tell him that he has one of the best crops of tobacco around Lancaster.

Our change of address list indicates that Joe Parker, who has been with Jackson and Moreland on some work at Allentown, Pa., has been transferred to New Orleans, La. — David P. Marvin, Lieutenant Commander, United States Coast Guard, retired, is now living in San Diego, enjoying the California climate and wishing he might be back in active service again. For a while Marvin served on the local Selective Service Board.

Chet Dawes wrote that his son, Laurens, who had a good position with Munsingwear, Inc., in Minneapolis, is now stationed with the Navy at San Diego. — CHARLES R. MAIN, *Secretary*, 201 Devonshire Street, Boston, Mass. *Assistant Secretaries:* PAUL M. WISWALL, MAURICE R. SCHARFF, New York; GEORGE E. WALLIS, Chicago.

1910

Seven members of the Class attended the Alumni Day festivities in June — an excellent affair — and everyone who attended had an enjoyable time. Jack Babcock, Karl Fernstrom, Charlie Greene, Alfred Hague, Fred Lufken, Alfred Phillips, and your Secretary were there.

Alfred Hague was up from New York City, where he has always lived. He is in the paint manufacturing business. — Fred Lufkin and Mrs. Lufkin came from Elgin, Ill. — Karl Fernstrom journeyed from Wilmington, N.C., where he is in charge of the new defense shipbuilding plant. — Al Phillips came from New York. He is one of the regulars who attend Alumni gatherings. — Phil Taylor has given up engineering and has moved to New Ipswich, N.H. He is now interested in wood-products manufacturing.

Harold Akerly called on your Secretary early in July. He was visiting his daughter, who lives in Newton. Harold is now superintendent of schools in Rochester, N.Y. — Walt Spalding is located in Boston. He is a lieutenant commander in the United States Navy, Bureau of Yards and Docks and is in charge of the new ammunition depot at Hingham, Mass.

Harrison W. Flickinger has been elected vice-president of the Republic Aviation Corporation. Colonel Flickinger was formerly director of export sales for the corporation. He has held this position since his retirement from active duty with the United States Army Air Corps in 1939. — William C. Arkell has been elected president of the Beech-Nut Packing Company.

Arnold C. Davies has announced the engagement of his daughter to Henry Whitcomb of Boston. — The following notice is taken from the New York *Herald Tribune* of March 25: "Announcement is made of the engagement of Miss Betty Partridge, of 230 E. 48th Street, daughter of the late Mr. and Mrs. Joseph Armitage Partridge of Yorkshire, England, to Mr. J. Stuart Sneddon, son of Mrs. James Sneddon, of 277 Park Avenue, and the late Mr. Sneddon."

To classmates in general, your Secretary wishes to emphasize the fact that the members of the Class are not subscribing to the Alumni Fund as they should. Let every '10 man do his best by contributing, so that the Class may show that it is doing its part. — HERBERT S. CLEVERDON, *Secretary*, 46 Cornhill, Boston, Mass.

1911

So you laughed when you read my prediction in the last Review that one hundred or more would probably attend our thirty-year reunion, realizing that a previous high of ninety-two was reached in 1936? Well, wipe that smile off — 118 were present at the Mayflower Hotel, Plymouth, at our reunion last June! That figure of 118, by the way, is three more than the 115 credited with attendance in the July issue of *Thelevener*, and we offer publicly our apologies (already expressed privately) to Harry and Grace Tisdale for the omission of their names and to Hal and Marion Jenks for omitting the name of their son, Bob.

Although Ted Van Tassel, chairman, than whom there is no than-whomer, and ye Sec made it a point to try to greet each arrival personally and to be sure each signed the log, something slipped when Harry and Grace arrived. They didn't sign the log, or did young Bob Jenks. Consequently the presumably official list which I turned over to Don Stevens, keeper of the log, did not contain these three names, so the blame for the omission is assumed entirely by Dennie. Of all people to have such a thing happen to! The Tisdales have been to every one of our five reunions to date.

Although Sara and I thought the class gift of 131 silver dollars was much more than wonderful, imagine our surprise and delight in mid-August to have a letter from Ina MacPherson, treasurer of the Denison fund, as 'twere, enclosing a check for $21.50 and bringing the gift total to $152.50 — and that ain't hay! Thanks again, classmates, from both Sara and me.

Don Stevens so adequately covered the details and highlights of the reunion in his official log, which appeared in the July issue of *Thelevener*, that it seems unnecessary to repeat them here. For the benefit of others who read these notes and may be interested, we had printed some extra copies of the paper and the rotogravure insert, and if you'd like one of each just "write to Dennie."

Generally speaking, the twenty-five-year reunion of a Class is usually the zenith in attendance, but not so with '11. We increased our attendance this year by more than 25 per cent over the figures of five years ago. We had sixty-three '11 men, fifty-two wives and youngsters, and three guests — President Compton and Charles B. Breed '97, Head of the Department of Civil and Sanitary Engineering, and George Russell '00, Professor of Hydraulics. This total of 118 raised our average total attendance to seventy-five — forty-three of them classmates and thirty-two family and guests.

One disappointment stood out — Mabel Herlihy, Jack's charming wife, was unable to attend because of her illness of long standing, thus making one loss in our "Fiveoutafive" 100 per cent reunion club. We sent her loving greetings and flowers, which brought this telegram: "Gorgeous flowers thrill me through. Thanks to each one of you. Mabel." The surviving ten members of the perfect-attendance-record group are Obie Clark, Marshall and Helen Comstock, George Cumings, Dennie Denison, John Herlihy, O. W. Stewart, Harry and Grace Tisdale, and Emmons Whitcomb. The latter, by the way, brought his attractive bride to the affair this year.

A dozen comprise the "Fouroutafive" group, each member missing but one reunion: Stan and Julia Hartshorn, Mabel Herlihy, Roy and Ina MacPherson, Bob and Margaret Morse, Chet and Mildred Pepper, Carl Richmond, Don Stevens and Ted Van Tassel. Here's an interesting sidelight, by the way; twenty-eight more attended than in 1936, which is accounted for by the fact that we had three guests, as noted, and twenty-three classmates and wives attending their first '11 reunion.

Heading the list of first-timers, alphabetically and traditionally, was one of our co-eds — June Adkinson, V. We surely

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were glad to have her with us, and she says she had such a good time she'll never miss another one. Other newcomers were Walter Allen, Don Bakewell, Phil and Bobby Caldwell, Bill and Gertrude Coburn, George and Marion Cowee, Alfred V. deForest, Leroy and Marjorie Fitzherbert, Hal and Marion Jenks, Cleon R. Johnson, George Kenney, Morris Omansky, Walter and Eden Phillips, Jim Pierce, Ed and Geneva Stimpson, and Bill Warner.

Perhaps one of the outstanding pleasures of the memorable affair was the way we who attended were showered with reunion gifts. Through the thoughtfulness of Bob Haslam, X, everyone received a fine cigarette lighter, suitably engraved for the event, compliments of Esso Marketers. Zeke Williams, XI, brought Barbasol and razor blades for the men and compacts for the ladies. Don Stevens, II, had handy rolls of friction tape from the Okonite Company; Jack Herlihy, II, had some key rings; and Heinie Zimmerman, IX, brought some steel ring puzzles which had everybody nearly cur-razy! Speaking of Zimmerman, another Heinie — George Kenney — was the center of attraction throughout the affair because of his prominence in United States Army aviation circles. A fine talk by him highlighted our Saturday night get-acquainted party. He told how the French lost the war, how Britain and America can and must win, reassuring us that America's planes and plane production are good and will be more than equal to their task.

Congratulations to our latest newlyweds — Mr. and Mrs. Arthur F. Leary! Said the Boston *Globe* of Sunday, August 3: "Miss Mary E. Duane and Arthur F. Leary were married . . . in the Church of the Assumption, East Boston. Following a reception at Longwood Towers, Brookline, the couple left on a wedding trip to the Great Lakes. They will reside at 44 Tennyson Street, West Roxbury. Mr. Leary . . . is head of the mathematics department at Hyde Park High School and formerly taught at the English High School. The bride resigned recently from a teaching position in the Revere schools."

A junior '11 wedding occurred in June, when Carol Parmlee Doty, daughter of Mrs. R. J. Doty of Wyomissing, Pa., became the bride of Albert Olof Wilson, Jr., of Winchester, son of our classmate, A. O. Wilson, and his wife. The bride was graduated from Wellesley College, while young Al was graduated from M.I.T. in 1938. They will live in Lexington.

Herb Angell, IV, died at his home in Portland, Ore., on May 20. A native Oregonian, he had practised architecture in Portland ever since graduation and had designed many of the city's prominent structures, including the U. S. National Bank Building and a number of industrial buildings and clubhouses in Columbia, Portland, and Rose City. His wife, a son, and a daughter survive him.

In conferring the honorary degree of doctor of engineering on Fred Daniels, VI, at this year's commencement at Worcester Polytechnic Institute, W. T. Cluverius, president, said: "President of the Riley Stoker Company of this city and of its subsidiaries, Mr. Daniels is an outstanding figure in the industrial and financial life of Worcester. The son of another great business executive, . . . Mr. Daniels inherited from his father engineering and executive talents of a high order, and these he has employed to good purpose, not only in achieving his own brilliant success, but for the advantage of the business life of the community. . . .

"In recognition of his eminent ability as engineer, industrialist, and business executive and of his tireless efforts for the public welfare, the Worcester Polytechnic Institute confers upon him the honorary degree of Doctor of Engineering." Congratulations, Fred, on a well-deserved honor.

Speaking at a luncheon for New York and New England newspaper men at Portland, Maine, in mid-July, Bob Haslam, vice-president and general sales manager of the Standard Oil Company of New Jersey, said there is a possibility of an increase in fuel oil and gasoline prices later in the Eastern section, but it will not be a runaway price. Bob was on a visit to see the work being done on the pipe line being built to carry oil from Portland to Montreal. This pipe line, he said, will mean a saving of tankers. They will not have to make a trip of twelve days going some 2,000 miles or more around into the St. Lawrence River, which is unnavigable through the winter. "That there is need of many more tankers is no secret. . . . There must be co-operation by everyone to meet the emergency that now faces the public in the East."

Another '11 executive, who like Bob Haslam was unable to get away from official duties long enough to attend our reunion, is Bunnie Wilson, XIV, vice-president in charge of operations of the Aluminum Company of America, with headquarters at Pittsburgh. You doubtless read with interest his convincing testimony before the Senate investigating committee in mid-June, when he flatly denied charges by Harold Ickes, Secretary of the Interior, that through "recalcitrance" and "obstruction" Alcoa had sought to control aluminum production.

From a recent issue of *Industrial Pittsburgh* we quote: "Often the key to what the Aluminum Company is doing is to be found in the officers who make its statement. With production the important thing this year, there was only one logical man to speak authoritatively about Alcoa this year. This was I. W. Wilson, an engineer from M.I.T., who, as the company's vice president in charge of operations, holds one of today's key industrial posts. . . ."

While we fortunates who were at Plymouth were celebrating, an impromptu '11 reunion was taking place in Carl Richmond's office, production branch, Office of the Under Secretary of War, 7264 New War Department Building, Washington, D.C. The official reunion was the first one Carl had missed, and up to the last minute there was a hope that perhaps Monk de Florez, naval commander, who flew to the twenty-five-year reunion in his own plane, might get hold of a Navy plane and take Richmond, Harold Lord, and Pete Gaillard to Plymouth. Alas, the plane trip did not occur. So it was that these four, plus Clarence Ofenstein, engaged by the Navy Department in a civilian capacity in the construction of turrets, gathered in Carl's office and got off a joint telegram to us at Plymouth.

Remembering him for his splendid portrayal of Nero in the "Court of Nero," which was a feature of our ten-year reunion at Plymouth in 1921, we were pleased to welcome to this year's reunion Paul Kellogg, IX, president of Stevenson and Kellogg, Ltd., consulting engineers, 970 Sun Life Building, Montreal, Quebec. Mrs. Kellogg was again with him. Paul did a yeoman's job trying to organize a Canadian caravan, but succeeded only in securing a 100 per cent set of regrets from the five other '11 men in Canada. Each of them, however, gave Paul news concerning himself. Vernon Foster, VI, with General Electric at Peterboro, Ontario, had just completed twenty-five years with that fine outfit, and he said: "My nose is so continuously on the grindstone that it is difficult to find the time or the energy for anything but business." Gus Frigon, VI, assistant general manager of the Canadian Broadcasting Corporation at Montreal and dean of the engineering faculty of Ecole Polytechnique there, has directed a continuous flow, one might say, of postgraduate students to M.I.T. from Quebec. His last effort in that respect was the sending of his own son, Raymond, to work for a master's degree to be won in 1942.

Theo Lafreniere, XI, chief engineer of the Quebec Ministry of Health, 89 Notre Dame Street, East, Montreal, was graduated from the aforementioned Ecole Polytechnique before coming with us for a master's degree and has acted as consulting engineer on many municipal projects and commissions in Quebec. He won the Fuller award of the American Water Works Association in 1940. I. F. Morrison, I, professor of applied mechanics at the University of Alberta, Edmonton, Alberta, is also a registered professional engineer with considerable outside practice. As is always the case for him, he writes, our reunion came at a very busy time, what with survey school and final exams under way. Bill Pead, VI, chief engineer of the gas department, Montreal Light, Heat and Power Company, who with his wife and then young baby attended our 1921 reunion at Plymouth, told Paul that all three of them were terribly sorry not to be able to attend this year. The daughter, Barbara, has now turned twenty and was graduated last June from Westbrook Junior College in Maine. She plans to complete her full college course at McGill University in Canada.

In addition to the joint telegram from our busy classmates in Washington, telegrams of regret also came to us at the

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reunion from Jim and Mildred Duffy in Chicago, Liv and Sara Ferris in New York City, Jim Greenan in Reno, Charlie Maguire in Providence, R.I., and Hank Smith in Bay City, Mich. Syd Alling, VI, and Frank Taylor, VI, both with the Rochester Gas and Electric Corporation in New York State, had planned to attend this one but found themselves "shorthanded like everyone else, with some of the younger men gone into the service."

Speaking of service, our son, Orville B., Jr., was graduated from Bowdoin College, Brunswick, Maine, last June and, having enlisted in the Naval Air Service when home last April for our silver wedding anniversary, reported at the Squantum Navy air base in Boston Harbor on July 15. After three weeks and a day he qualified as a naval air cadet, and reported on August 15 at the Jacksonville, Fla., naval air station. He is to train there and later at Pensacola for a period of six or seven months to become an ensign in the United States Naval Reserve for three years' active service.

Stacy Bates, II, of Sheridan, Orr, Drapeau and Bates, attorneys in Ventura, Calif., was another who attended our first party at Plymouth and who nearly came to this year's affair. He was East on business in late April, but just couldn't stay. "Twenty years ago," he writes, "I was farming there in Massachusetts. Not wanting to end up in a counterpart of the P.W.A., W.P.A., or what have you, I entered Harvard law school in the fall of 1924 and few months later sold the farm. I was graduated in 1927. Having been advised by the state bar of California that the next bar exams would be in February, 1928, I packed the family — self, wife, and two kids — in our 1925 Buick (a good car, too) and with a trailer took my time getting across the continent. I finally got a job — low pay at the start — and along in 1931 or 1932 held the job of city attorney for Ventura for a couple of years, resigned, took on the job of assistant city attorney, got appointed state inheritance tax appraiser, and four or five years ago was appointed city attorney of Ojai, a small place near Ventura. At present I hold the three last-mentioned positions as well as partnership in the firm. I am not getting rich, but I make a good living and would have no kick coming if I could get farming out of my blood. I have an interest in three farms located around the county, and with prices of lemons and oranges going the way they are, I fear I'm again going to have to support the farms instead of vice versa. We have one youngster at Mount Holyoke, and the other hopes to follow her there unless the rising taxes mean that the government, to all intents and purposes, absorbs the college educations. . . ." Also from the West Coast came regrets from Ormond Bean, IV, Oregon public utilities commissioner at Salem.

Norman Duffett, X, with the Union Carbide and Chemical Company at Niagara Falls, reported he had "3,300 men on the local pay roll. It is a question of whether they are keeping me busy or I them — guess it's both!" Bob Haslam, who thoughtfully sent us the lighters, was unable to attend. "Conditions are somewhat chaotic because of the diversion to Great Britain of fifty tankers." Six years ago, you know, Bob changed from research and development to sales, being made vice-president in charge of sales for the Standard Oil Company of New Jersey and its affiliates, the Louisiana and Pennsylvania Standard Oil companies, and Colonial Beacon Oil.

Ike Hausman, I, wrote from Toledo that "the Hausman Steel Company, building products and concrete forms, is quite busy supplying defense plants and other government agencies with re-inforcing steel, wire mesh, and similar items." He added that his second son was being graduated from Yale, Phi Beta Kappa, this June, his oldest having been graduated in 1938 from Michigan, and his third due to be graduated from Michigan in 1942. John Hugelman, I, an invalid for more than three years in Wallingford, Conn., wrote that he and his wife have a married daughter, and a a son who was graduated from Massachusetts State College and is now stationed at Camp Edwards in Massachusetts.

Bob Mather, VI, retired, wrote from Windsor Locks, Conn.: "Because of my brother's condition, my wife and I can't leave him to get to Plymouth." They were with us in 1921. Thede Polhemus, XI, operating a small placer property of his own now in Silver City, N.M., said that "up to this time it has been all outgo, but I am turning the corner now." He came east to see his folks in Newtonville last fall and couldn't make another trip in June, he said.

Oliver Powell, XI, engineer with Marshall, Meadows and Stewart, Inc., shoe manufacturers, Auburn, N. Y., sent regrets "because of family graduations and my wife's ill-health." He cordially invited all classmates motoring through Auburn to "look up Howard Ireland and me." Hal Robinson, I, and his wife had planned to attend, but just two days before the reunion their daughter was rushed to Worcester City Hospital with lobar pneumonia, and of course they couldn't leave her. Fortunately she recovered quickly.

Family graduations got in further dirty work in the cases of Johnnie Scoville, IV, of West Hartford, Conn., and Warren Simonds, I, of Orange, Mass. Johnnie's oldest daughter, Isabel, was graduated from Skidmore that week end, and Warren was with his daughter, Ann, at Colby Junior College in New London, N.H., for her senior week. Ralph Walker, IV, prominent New York City architect, had hoped to attend but wrote that "the pressure has increased and we are trying to get a certain piece of architectural work done by mid-June." Similarly, Johnnie Wilds, II, president and treasurer of the Protection Mutual Fire Insurance Company, 231 South LaSalle Street, Chicago, had been "trying my best to make it this year, but the cards are stacked against me. I'm too busy to leave and must therefore be there in spirit only." He and Mrs. Wilds have one married daughter, Nancy, who just celebrated her fifth wedding anniversary. Nancy has a daughter, four, and a son, one. The Wilds' younger daughter, Charlotte, was being graduated from high school this year, Johnnie wrote, and "will attend her mother's old school — Converse College, Spartanburg, S.C. — this fall." John has been on the board of the National Fire Prevention Association for some time, having been re-elected in Toronto last May for a three-year additional term. He has also served on the insurance committee of the Chamber of Commerce of the United States for two terms, "but will be going off that shortly."

In sending his current contribution to the Alumni Fund, K. W. Dennett, II, plantation superintendent of the Hawaiian Pineapple Company, Ltd., Honolulu, wrote: "Sorry I couldn't be with you all in June, but summer is a very busy time in the pineapple business. I have not been in the States since 1934, when I returned from a trip around the world. As we live about a mile from Schofield Barracks, we meet Technology-educated Army officers from time to time." At the reunion we learned from Clarence Dow that he has returned to Massachusetts from Kittery, Maine, and is living at 40 Homestead Avenue, Weymouth, and operating Dow Motors, Inc., Independence Square, South Weymouth. Jim Duffy, VI, on from Chicago with his wife and four children in mid-August, dropped in for a fine call and was all ears for reunion chatter and side lights. He and Mildred had such a good time at the twenty-fifth that they were very much disappointed when business seemed to break just wrong for them to attend this year. Jim, who operates his own company specializing in business counsel, has an office at 38 South Dearborn Street in the Loop and is doing mighty well.

Carl Ell, XI, another whose duties in early June prevented him and his wife from attending the reunion, has just completed his first year as president of Northeastern University in Boston. At the baccalaureate service in the Old South Church, Boston, last June he exhorted his first graduating class to evaluate properly their contributions to life with the vision of the eye and soul.

C. R. Perry, III, now sales manager for International Correspondence Schools in central Massachusetts and lower New Hampshire, with headquarters in Lowell, dropped in one afternoon in early July and expressed his regret at being unable to attend the reunion. Fat travels a great deal, and the reunion came at a busy time for him. Not having seen him for lo, these many years — he has dropped from the 240 pounds of undergraduate days to my own weight (172) — I was ashamed to admit I actually did not know him when I came into the office and found him waiting for me.

When he sent along thanks for some pictures I secured for him, Don Stevens, II, vice-president of the Okonite Com-

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pany, Passaic, N.J., wrote that his son is working for his fourth summer at Okonite — in overalls in the maintenance gang. O. W. Stewart, I, sent me an announcement of the 1941 August camp of the Appalachian Mountain Club, held this year at Harris Lake in the Adirondacks. He called attention to the fact that Frank Stibbs, XI, of Wethersfield, Conn., is this year a member of the camp committee. Ruth Tolman, VII, wrote a nice note to Roger Loud, on whose follow-up list for the reunion she was, saying that she was graduated from Smith in '08 and took only postgraduate work with us, but thought the Class of '11 was a fine, thorough organization, capably administered.

On their way back from their trip west to Nowata, Okla., Bill Warner, I, and his wife had a pleasant trip in eastern Canada with one of their sons, who is in Baltimore at present. Shortly after reaching home the Warners went to Colorado, where they saw another son and had some good trout fishing. As an inspiration to those classmates who have never attended a reunion, I want to present this excerpt from Bill's letter, for the sentiments seem to reflect the feelings of a lot of the twenty-three who attended this year for the first time: "I want to take this opportunity to thank you and Van for the splendid work you both did to make the thirtieth reunion a big success. As you know, this was my first reunion. It was a great treat for me to meet so many of the fellows I had not seen for thirty years. Aside from a few with middle-age spread, I had no difficulty in recognizing them. You may rest assured that I will plan to be back every five years from now on.

"It is too bad that business conditions were such that many were prevented from attending this year. If those who have not attended any of the past reunions knew what they are missing, I am sure they would make every effort to be present at those in the future. . . ."

In anticipation of extended active duty in the Army, Alex Yereance, I, and his wife have put their home on Winter Street, Ashland, Mass., on the market. The house was built in 1780 or 1790, added to in 1820, and completely modernized since without sacrificing the desirable old features such as the wainscoting, wide-board floors, Dutch oven, six fireplaces, and old hardware. Drop him a line if you're interested.

You who read these notes are among the faithful who have already supported the second edition of the M.I.T. Alumni Fund. Nevertheless, I want you to turn to the special page at the start of the class notes section and note what an enviable position good old '11 has in the list of classes. Save for 1915, with 60 per cent of their quota raised, our 43 per cent is the best percentage as of August 15 since 1907, the date of our entry to the Institute. We have a hundred and eleven '11 subscribers as of September 1, but that number should be larger by at least 50 per cent. Go ye into the highway, my loyal classmates, and spread the word among the others that they should support this drive.

Over the last week end of September your Secretary once again hied himself north from Worcester to Dunstable for the 1941 annual freshman camp. This is the sixteenth camp, and I've missed but one of them to date — it's a week end I look forward to eagerly each year.

Here are three new addresses at hand from the Alumni Office: G. Arthur Brown, X, Apartment 707, 2514 Fourteenth Street, Northwest, Washington, D.C.; Frederick C. Harrington, Post Office Box 32, Brighton, Mass.; Ralph B. McEwen, Box 67, Baker, Ore. Don't forget to "Write to Dennie!" — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Worcester, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford, Mass.

1912

James A. Cook, VI, has been helping the Alumni Fund by promoting it as far as possible in our own Class. Probably you've heard from him, in his capacity as Class Agent, during the past year. If not, you will. Incidentally, he'll appreciate hearing from any volunteers among our classmates who would be willing to give just a little bit of time and effort soliciting, by mail or personal interview, contributions to the Fund. Jim's address is 90 Exchange Street, Lynn, Mass. Your Assistant Secretary was in Boston for several days last June at a convention, and while he was there he was most hospitably entertained by Jim and Mrs. Cook.

Jim received a letter from John W. Raymond, Jr., I, who is stationed at St. George's Island, Bermuda: "I have recently begun to realize that we are of the older group, and I have had a number of younger M.I.T. men under me who, while my superiors in modern and social problems, are in need of the influence of a hard-boiled guy who has had to take it and like it.

"I have also come to look upon the educational problem from a new angle since one of my own children has been in college, which may account for my slight loosening up. . . ."

Your Assistant Secretary was recently at another convention in Toronto, and whom should he meet in the lobby of the Hotel Royal York but William C. Bird, I, who was in that city on business for his company. Bill is executive vice-president of the Prophylactic Brush Company of Florence, Mass. We were going in different directions and had only a couple of minutes to chat.

William A. Canaday, II, stopped for a little visit while he and Mrs. Canaday were visiting New York recently. Bill is part of Uncle Sam's Post Office Department at Albany, N.Y., and he related some of the interesting details of the huge job of keeping the mails moving. Bill and Mrs. Canaday still remember with pleasure our twenty-year reunion at Plymouth and hope we'll all be at another one (it's thirty years, boys) next June.

A welcome addition to these notes came from Jabez H. Pratt, X, who is located in Chicago and is vice-president of the Liquid Carbonic Corporation. Even though he doesn't say much about himself, we appreciate his thinking to send us the news about another classmate.

Pratt wrote: "In the mail from Brazil came a voice from the past, which I think you and the rest of the '12 boys might be glad to get through The Review. I had not heard from Joe Fish since we were graduated and do not remember seeing any account of his activities in past issues of The Review. I am enclosing a copy of his letter. . . . Business with this company is good, and we are still working, although our priorities problem is becoming more serious from day to day."

As far as we can recall, Joseph P. Fish, VI, has been located in Brazil for quite some time. His address is Caixa Postal 688, Recife, Pernambuco, Brazil. Here's what he wrote to Pratt: "I passed through your town not long ago, coming from Vancouver, but as it was Sunday and your phone number didn't appear in the book, I couldn't get in touch with you. I called Mowry's house, but no one was at home.

"We have a ranch in this state where we breed horses and mules and where I have a factory for making starch out of mandiocaroot. I spend most of my time working there. The family, which now consists of a wife and two much traveled little girls, lives part of the time at the ranch, part at the beach in Recife, and spends school months in São Paulo.

"One of the things in which I have an interest here is a soda fountain business, now consisting of one store served by a factory. We are planning enlargement of the existing store and the opening of at least one other in another type of district — the shopping center of town. The present place is at the tram terminal waiting room."

A letter from Charles H. Carpenter, II, offers a suggestion for pooling traveling costs for the next big class reunion so as to make expenses a little lighter on those who have to come considerable distances. His suggestion will be referred to the appropriate committee when we get down to actual plans for our thirty-year reunion. — FREDERICK J. SHEPARD, JR., *Secretary*, 125 Walnut Street, Watertown, Mass. DAVID J. MCGRATH, *Assistant Secretary*, McGraw-Hill Publishing Company, Inc., 330 West 42d Street, New York, N.Y.

1913

Ten '13 men attended the Alumni Dinner in June: Achard, Jim Beale, Cameron, Cohen, Glancy, Hersom, MacKinnon, Murdock, Page, and Townsend. Fred Hersom, VI, who has been running his family's catering business in Chelsea all these years, now plans to go into some other line of business. Joe Cohen, X, denied that he was retired. Quite the opposite, Joe is running the Atlantic Gelatin Company at Woburn, turning out a high percentage of the country's gelatin from the raw materials — plain skin and bones. After reading the letter which Ed Cameron, I, wrote for these

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notes some time ago, it is not a surprise to hear that he is studying the art of short-story writing. His letter showed that he has a knack along that line. Quite off hand the news slipped out that Jim Beale's daughter has taken her doctor's degree. This too, doesn't come as a surprise. Those of us who knew Jim well as a student in Course XI suspected that he kept a store of scholarship in reserve. Jim was the reticent gentleman and scholar.

Arthur Townsend, II, wrote: "Early in February a chap walked into my office under the escort of Karl Fernstrom '10. I immediately recognized him as John B. Woodward, a classmate of ours. For some years he has been general manager of the Newport News Shipbuilding and Dry Dock Company and now is vice-president and general manager. He was in Cambridge to borrow Professor Fernstrom, who was formerly with the Shipbuilding Company, to become vice-president and general manager of a subsidiary. This subsidiary is called the North Carolina Shipbuilding Company, and has a new yard at Wilmington, N.C., where they build freighters. I had not seen Woodward since graduation, but was able to call him by name since he has changed but very little since we first knew him. It was a real treat to see him again and to observe how he has moved up into the industrial world.

"Harry Peck passed through the corridors one day and chatted with Nat Sage and me. Albert P. Nelson, II, who has been with the Cities Service Refining Company at the Braintree plant for some years stopped at the office recently for a brief chat. He has a son who is a freshman at the Institute this year. Shortly after, Ted Hersom was passing through the Institute and dropped in for a few minutes."

Walter Muther, I, is a major at Wright Field, Dayton, Ohio, in the Air Corps, matériel division. Allen H. Means, XII, is now a lieutenant colonel and lives in San Luis Obispo, Calif. Harold L. Nickerson, II, has been commissioned a lieutenant colonel and is stationed at Shreveport, La. Mayo Tolman, XI, has moved from Des Moines, Iowa, to Picayune, Miss.

The New York *Journal of Commerce and Commercial* of April 23 printed a story about the promotion of Joseph Strachan: "Carnegie-Illinois Steel Corporation announced today the appointment of Joseph Joslin Strachan as assistant to the president. He formerly was assistant chief engineer of the Pittsburgh district. Born at Wilmington, Delaware, February 13, 1892, Strachan graduated from Massachusetts Institute of Technology in 1913. After spending six years in railroad, water front and industrial design and construction with Westinghouse Electric and other companies, he was made public works officer of the Boston Navy Yard in July, 1917. In October, 1919, he was made superintendent of the Hudson River Works of the General Chemical Co. Subsequently he held executive posts with Sanderson & Porter of New York and Congoleum Nairn, Inc. at Kearny, N.J. Strachan joined Carnegie-Illinois as assistant chief engineer, Pittsburgh district."

On August 15, Bill Brewster's daughter, Lois, was married in Plymouth to Lothrop Withington, Jr., Lieutenant, United States Air Corps. Harry Peck's daughter, Marilyn, made her debut on September 13 at the Rhode Island Country Club.

As of August 15, the Class of 1913 had contributed 30 per cent of its Alumni Fund quota of $3,380. The average for classes 1911 to 1915 inclusive is 39.6 per cent. This showing is poison to Larry Hart, our Class Agent. Please do your share toward making it his meat. — FREDERICK D. MURDOCK, *Secretary*, Murdock Webbing Company, Box 784, Pawtucket, R.I.

1914

The five months between Alumni Day and the issue of The Review in which these activities are discussed always seem like a long span. Yet this year the memories of Alumni Day remain vivid. In addition to the usual enjoyable time had by those who attended, '14 men have reasons to remember this year in particular. Seven sons of classmates received their degrees at commencement. An eighth, Arthur L. Covitt, son of Phil Covitt, is taking the five-year co-operative Course in Electrical Engineering and, accordingly, does not receive his undergraduate degree until next year, when it will be awarded simultaneously with a master's degree. The seven sons of our classmates are: Herman A. Affel, Jr., VIII, Chester A. Corney, Jr., II, Frank J. Jerome, 3d., I, Walter P. Keith, Jr., X, Howard A. Morrison, Jr., XV, Clifford L. Muzzey, Jr., XVI, and Lyle M. Richardson, Jr., VII. This is an unusually large group, and we can be proud that these sons are following in their father's illustrious footsteps.

The special theme of the Alumni Day symposium dealt with modern medicines and associated techniques. As all those who have attended Boston meetings know, our classmate, Ernest Crocker, has always had a wealth of information on this subject. We naturally expected, therefore, that at the predinner meeting of the Class on Alumni Day Crocker would set out to demonstrate that the proper use of vitamin B_1 would insure the fact that on the following morning every '14 man would have a "head clear as a bell — just like any other day." By some coincidence, our meeting was held adjacent to the meeting room for the head-table guests, and by some unknown procedure, the guests were misled into the '14 room, where Crocker and his committee proceeded to demonstrate the great value of vitamin B_1. Those who attended the great health experiment and other Alumni Day events were: Atwood, Clisham, Crocker, Fales, Hamilton, William Jackson, Jerome, Keyes, MacKenzie, Morrison, Peaslee, Richmond, Tallman, C. H. Wilkins, and H. S. Wilkins.

Charlie Fiske and his family have appeared in the news during the summer. In addition to his duties as vice-president and director of the General Motors Acceptance Corporation, Charlie has been elected a trustee of the Dry Dock Savings Institution, which is the sixth largest savings bank in New York State. The New York papers and those in some other cities carried a picture of Charlie at the time the president of the bank announced the election. Earlier in the summer, Charlie's very attractive daughter, Grace Marie, also appeared in the New York papers. She was married on June 26 to Darwin Lathrop Gillett, 3d.

While on the subject of vital statistics, we should mention two important announcements received during the summer. Oliver C. Hall demands that he immediately be re-instated as the junior class-father. A daughter, May Gabrielle, was born on the fourth of June. Congratulations! — The other announcement, even more shocking, is that the official class bachelor, Starr W. Stanyan, was married on September 24, 1940, to Emma Gladys Jackson of Porterville, Calif.

Our class pharmacist, Paul W. Shedd, has been elected first vice-president of the New Hampshire Pharmaceutical Association. Paul runs the leading drugstore in Keene, N.H. — Another classmate to serve the Institute is Henry R. Aldrich, who has been nominated as a member of the Visiting Committee on the Department of Geology. Aldrich is assistant secretary and editor of the Geological Society of America in New York City.

Joining the large group who have been called to Washington is A. H. Miller. Gus had been in New York City with the British Purchasing Commission but was transferred to Washington when the Commission moved there. Gus is serving as a supply officer in connection with British requirements.

Frank Ahern has temporarily moved out of Washington. He has been conducting a course in fire protection engineering for architects in the National Park Service and has been at Omaha, Santa Fe, and San Francisco. He expected to return to Washington before long.

Henry F. Merrill, our Shanghai commuter, is again back in the United States, having arrived in San Francisco on June 30. After touring the Pacific Northwest, Merrill came east and has been in New England throughout the summer. He is going to be in the New York office of the Standard Oil Company of New Jersey at 26 Broadway for a while. If conditions permit, he expects to return to China, arriving in Shanghai around the first of the year. Merrill states that his schedule is such that he expects to be back here in 1949 when we are celebrating our thirty-fifth, and even perhaps by 1944. — H. B. RICHMOND, *Secretary*, General Radio Company, 30 State Street, Cambridge, Mass. CHARLES P. FISKE, *Assistant Secretary*, 1775 Broadway, New York, N.Y.

1915

Greetings to all classmates as the '15 column begins another season! First, I

1915 Continued

feel it is most important to tell you about the Alumni Fund. Contributors by classes on per cent of quota basis average 50.4 per cent. Our Class filled 58 per cent of its quota. Contributions by classes on a per cent of quota basis show 34.7 per cent, against which 1915 has paid 60 per cent of its quota. This is a remarkable showing for the Class — well above the averages, particularly pleasing when seen sandwiched in between our undergraduate rivals 1914 and 1916, whose averages in both cases are well below ours. The Fund has the problem of reaching the old contributors as well as getting new ones, and I urge all classmates who formerly contributed, but who have not done so for this year, to do so.

Many changes in address show that a number of our men are undoubtedly in important positions in the armed services and in defense work, and we should like to hear from any of them who will take the time to write.

In the first quarterly issue for 1941 of Baldwin Southwark house organ is an article by Guernsey Palmer on "The Operation of Oil Pipe Lines and Their Part in the National Economy." The article was written just a few days before his death and is typical of his contribution to the development of Diesel engines for pipe-line pumping service.

Jim Tobey came in for some publicity and a write-up in the New York *Sun* of February 20, in which Jim described how the bakers were preparing a loaf of bread packed with vitamins, ready for large-scale production. Jim's activities include the amazing range of writing, studying, lecturing, and conducting investigations covering many legal and dietary matters. — One of the Boston papers carried the announcement of the engagement of Joan Hadley, daughter of Mr. and Mrs. Harold E. Hadley of Worcester. I think this is the same Harold who was the football player on our class teams. One by one these class babies are growing up!

In a recent issue of the Brookline *Chronicle* is a write-up of Bert Adams, with a rather mysterious and eerie photograph of him. The article pays him a fine tribute for his ability and showmanship. I know we always enjoy and appreciate Bert's performances for the class parties.

It is sad to list the passing of Daniel J. Danker of 73 Dean Road, Brookline, who died of a heart attack on May 29 at the wheel of his automobile in Newton, Mass.

In return for the good wishes we sent '16 for their twenty-fifth reunion, Henry Shepard sent us this letter: "Many thanks for your cordial well-wishes. Your letter was given to me by Mr. Wannop upon my arrival at Oyster Harbors. We had a wonderful party there, with a total of 116 men. I'm sure that this fine gathering was largely the result of the advance publicity material which you so kindly gave me last winter. Many, many, thanks. . . ." Thanks, Henry, and may '16 always be very friendly with us.

The class of '26 also used our publicity, and Chenery Salmon of that Class wrote me a letter of appreciation. We shall be interested to see whether '17 will profit by the good times we had.

On June 13, Mary Louise Franks wrote from Philadelphia: "Jimmie was delighted to receive your nice letter telling him about the class luncheon in Philadelphia. He appreciated your kind thoughtfulness very much indeed and therefore has asked me to write to thank you. Jimmie hopes to come home in another week to recover from the second operation in the past month — an operation on the spine, which finally stopped the intense pain he had been suffering for months. He is fine now. I have heard so much of all of Jimmie's Technology friends and hope to have the pleasure of meeting you all some day. . . ." Thanks to you, Mrs. Franks, and to both of you go the Class's sincerest wishes for Jimmie's speedy and complete recovery.

Summer memos: On my way to Detroit this summer I spent a day and an evening with Tess and Gabe Hilton in East Aurora, N.Y., where they live on an attractive old farm. — I had an afternoon with Benn Lapp in Buffalo. I hadn't seen Ben for years. He has a daughter, who is a senior at Syracuse University, and a ten-year-old son. Ben has charge of production of dyes at the National Analine and Chemical Company's plant. — I lunched in Lockport with Ben and Mrs. Neal and their daughter Barbara, who had just been graduated from Syracuse University. — Loring Hall in Detroit was very busy on work supplying the automobile manufacturers with defense parts. — When Ken King from Wilmington is in New York he spends his evenings with Ralph Hart, and *what* evenings! — Wayne Bradley was out when I telephoned him in Bridgeport, and the bachelor Secretary didn't feel it quite within the bounds of propriety to call on Mrs. Bradley alone. — Archie Morrison caught a seventeen pound, three ounce salmon in Lake Sunapee, N.H., the largest fish to be taken out of the lake at that date. Arch posed with the fish for his newspaper write-ups and finally had the fish stuffed and mounted. This isn't a tall story, for I heard about it myself up there. — Confidential information from a reliable source tells me that Speed Swift, now a representative, may run for state senator in New Hampshire. Could be that '15 may yet have a governor in its gang! Good luck to Speed.

In addition to these I have listed, there are the usual number of men I see regularly around Boston and New York. All these contacts contribute toward the fine old friendships in our Class which I think are becoming more mellow as we grow older. — You shortly will receive my pleas for class dues. Not much — not often. Pay your class dues and *really* help Azel! — AZEL W. MACK, *Secretary*, 40 Saint Paul Street, Brookline, Mass.

1916

All of New England was deluged with rain on Wednesday and Thursday, June 4 and 5. The wind had been in the east for three days when Friday, June 6, dawned clear and cool. The wind shifted to the west and 114 members of '16 shifted into high gear for the Oyster Harbors Club, Osterville, Mass.

One gang started from New York on the Providence boat, then came from Providence to the club by bus. We have yet to learn all the details of that night cruise up the sound. All agree it was a rough trip, but most do not know whether the unsteadiness was caused by the weather.

Clint Carpenter, all the way from Norfolk, Va., arrived via Providence in Joe Meigs' car with Steve Brophy, Lee Graves, and George Maverick. Jap Carr was one of the gang who came from New York to Providence by boat, then to Cape Cod by bus. He roomed with Pet Stone and would have played better tennis, but Frank Hubbard got in his way too much. Bob Burnap, Bruce Clarke, Harold Dodge, Bob Naumberg, Stew Rowlett, and Len Stone were also on the Providence boat and took the bus to the Cape. We saw Harold with Ed Ekdahl, Bert Ellis, Howard Hands, and Eddie Jenkins, among others. Harold and Bruce Clarke roomed together. We hear that on the boat trip Lee, Stew, and Jack Camp were some trio — sang through most of the night.

What a place! There was golf at the front door, swimming and sailing at the back door, tennis to the left of us, drinking to the right of us! Never was a more genial crowd gathered together. A mob of ten or twenty was always at the entrance to rib a new arrival about the twenty pounds of weight put on, or the new car, or what have you.

Well Harvey and Jack Freeman drove over from Providence in Jack's Packard. Harvey was always in sight and on hand doing a swell job as treasurer. He finally caught up with everyone that came. — Wallace Blanchard drove to Oyster Harbors with P. P. Gooding. We agree with you that the clambake wasn't much of a clambake, but at least we didn't freeze, and the food and beer were good. It was the only free beer on hand, too.

Bill Drummey drove in from Boston, bringing Izzy Richmond. He was most often seen playing bridge or just sitting. Joe Duggan turned up in a new Cadillac. The shoddy business is doing well; look out or Joe will be getting your woolen suit. — Ed Ekdahl drove to the Cape via Boston. He brought Charlie Reed. His golf with Harold Dodge, Bert Ellis, Murray Graff, and Howard Hands took the form of kibitzing. Jimmie Evans and Ed want to take time off at next reunion to have Ralph Fletcher finish one of his short stories. John Fairfield drove from Troy, N.Y., and roomed with Saul Makepeace. Dutch Gaus, looking no older than in '16, drove in with Frank Hubbard. They roomed with Cy Guething. Incidentally, who turned their room upside down? Or was it a heavy wind? John Gore of Canajoharie, N.Y., drove on with his family and roomed with Parsons and Jack Camp from Mexico City. John Gore said he and his two roommates all used old-fashioned razors!

1916 Continued

Walt Binger flew to Providence, met George Sutherland there, and drove to Oyster Harbors. Walt was one of the sailors. Both days he went out with Sam Ellsworth and Bill Brown. Bill drove on from Cleveland with Herb Ellis. They roomed together at Oyster Harbors. Bill spent some time digging up old stories of Course VI with Jap Carr, the cracker baker, and Ed Ekdahl, who spent much time in China. Bill has a daughter at Colby College.

George Allen, of the Radio-Victor Corporation of America at Camden, N.J., roomed with Tom Berrigan from Boston. Ed Weissbach was on hand. His home is in Merchantsville, N.J., and his office is only a block from George Allen's in Camden. Joe Minevitch and George Allen were graduated from the same grammar school. Well, well, it takes twenty-five years to discover many things.

As for golf, Joe Meigs sank a fifty-foot putt on the ninth hole. Then there was the foursome who had never played golf before: Cy Guething, Emory Kemp, Duke Wellington, and Steve Whitney. They wore themselves out playing the first nine holes. The scores were: Whitney, 81; Guething, 69; Wellington, 85; and Kemp, 91.

Sam Lapham, South Carolina's only architect, appeared, as usual, with his black string tie but minus the black ribbon on his glasses. Shades of Cole Blease, but it was good to see Sam again!

Jack Burbank rolled in from Hartford, bringing George Petit and Francis Stern. They arrived just before the dining-room doors closed for lunch, but most of the early birds were still in the dining room. Jimmy Evans was already on hand, circulating around as always. (Can anyone remember a reunion when Jimmy did not wear a linen cap?)

Hal Gray drove Eric Schabacker to the Cape from Syracuse. Hal still wonders what happened to his game of golf when he played with Arvin Page, Hen Shepard, and Bob Wilson. Howard Hands passed up a Canadian fishing trip for the reunion. He roomed with Murray Graff. Howard learned that he'd been doing business with Gus Schaefer for some time, not knowing they were classmates, and that he and Sandy Claussen both use the Wellesley Farms railroad station to go to work every day.

Emory Kemp roomed with O. B. Pyle and Duke Wellington. Bill Leach drove to Osterville with S. Ober in the latter's car, and they roomed together. W. B. Littlefield roomed with Rusty White, and golfed with Art Caldwell, Dick Hunneman, and Sutherland. Dave Patten brought Rusty White and his famous fish net to the Cape. Dave roomed with Steve Whitney and put up a nice supper for a few classmates en route to Boston Sunday night. Hy Ullian brought Barney Gordon down and roomed with him. It was a treat to hear Barney sing again.

Norm Vile drove from New Britain, roomed with Don Woodbridge, sailed on Cotuit Bay with J. D. Robertson, and discovered more than a dozen sand bars. Nat Warshaw and Harold Russell roomed together. Don Webster drove down with Bud Kaula and roomed with him. Palmyra, N.Y., seems to agree with Don. Ed Whiting roomed with Ed Barry and Herb Mendelson. Ed won one of the door prizes — twelve pairs of socks. Don Woodbridge roomed with C. J. McCarthy. Don plays a hard game of tennis. Wonder how he'll be five years from now.

Bob Burnap, who got some swell pictures which will be on view at our next reunion, roomed with Arthur Caldwell and says he did a grand lot of sitting at Oyster Harbors. — Arvin Page drove all the way from Winston-Salem, N.C., visiting Jim Ralston at Trenton en route. At Oyster Harbors he roomed with Jimmy Evans and calls him an ideal roommate.

Also attending the reunion were Wesley Blank, Raymond G. Brown, Frank D. Chandler, Dina Coleman, Robert A. Crosby, George I. Crowell, Theron S. Curtis, Frederick W. Childs, Earl A. Edwards, Karl E. Engstrom, Richard C. Fellows, Herbert Gfroerer, Allen L. Giles, Freeman C. Hatch, Jr., Paul Hatch, Stewart Keith, William T. Kniesner, Frederick A. Spencer, Milton O. Schur, Earl H. Townsend, Porter C. Webber, Edward H. Williams, and John E. Woods.

Water on the golf course did not deter the masters of that art from warming up for Saturday's contest. And the tennis courts, mushy from the rain, were broken in nicely.

Bill Barrett played golf with Hy Ullian and Barney Gordon. Remember Bill's drive off the first tee? Bill roomed with Howard Green from Cleveland. Bill's wife and two-year-old son stayed at East Bay Lodge, where the Class of '96 adopted the baby.

The wind blew so cold Friday evening that we wisely decided to have the clambake served in the grill adjoining the bar. What clams! And what lobster! Henry Shepard had some time getting the beer delivered. He finally had to call at the brewery himself and bring the beer from Boston in his own car. Well, with that "boys and girls together" horn on his new Oldsmobile, we're sure to understand why the beer keg wasn't full when it reached Cape Cod.

Bud Kaula and Don Webster were found, along with Jack Freeman, discussing the fate of nations and the relative merits of the American Legion and Veterans of Foreign Wars. And all this was at 3:00 A.M. Sunday morning!

After dinner, Hovey Freeman showed his former reunion pictures — remembrances of Fisher's Island and of Fenwick. There were two grand reels. It was a pleasure to have Ted Guething with us for the night. Ted is Cy's son, who received his degree on Tuesday, June 9. He's a grand boy! Cy is now holding forth at Grosse Pointe, just outside of Detroit, Mich. All traveling classmates take note.

Tall stories in the grill, eight tables of bridge and one of contract rummie kept the boys up until all hours of the night. The reunion committee struggled with last-minute details of prizes, events, how to make both ends meet, and so on. Fortunately, Tom Berrigan, athletic commissioner for the occasion, was strictly sober and kept everything straight. Steve Brophy kept all the gang together until the last detail was agreed upon. Then Bill Farthing ducked out to join Steve Berke, Ralph Fletcher, and Bob Wilson at contract.

Among the classmates who turned up for their first reunion were Frank Bucknam from Chicago; Ed Barry, pool expert and consulting engineer from Boston; Dan Comiskey, gentleman-farmer and purveyor of milk from Dover, Mass.; Bob DeMerritt a colonel from Fort Monroe, Va. (Did he show you the picture he carries in his wallet of that attractive daughter now attending Connecticut College for Women?); Paul Duff, he of the nine children (and his wife looks as young as a bride); and Bill Drummey, our famous school-architect from Boston, always looking as neat as a pin. Howard Green from Cleveland came in a nice new LaSalle, accompanied by Mrs. Green, their daughter, and their son. Emory Kemp came from his new home at Hingham, Mass. He knows all about refrigerating stores, and so forth — especially Atlantic and Pacific stores. Herb Mendelson of New York is liquidating his Hudson River Woolen Mills. Obie Pyle — and were we glad to see him — hasn't changed a bit. He found out that Bob Wilson uses a lot of his instruments, especially pyrometers. Don't get lost again, Obie. Charlie Reed, now a major, was on hand for the week end. It was great to have him with us again. Nat Warshaw came from Belmont — got away from his busy industrial truck business for a few days of fun and relaxation. Vert Young came all the way from Bogalusa, La., for the frolic. He left his two-hundred-acre estate and all that.

What a day, Saturday! Many slept late, but golf, tennis, and sailing came in for good licks. After lunch Boston played the rest of the country for a few bottles of Scotch at a game of softball-baseball. Herb Mendelson lost his money. George Petit pitched like a professional. Arvin Page wants to play on the same team with Dan Comiskey at the next reunion, so Dan won't land on him again when sliding for a base. Arvin is still limping.

The class picture was taken at 5:30 on Saturday afternoon. The '16 berets made their appearance for the first time. Of course, the picture won't flatter anyone, but it does record those present at the occasion, all except Chuck Loomis, who missed the boat.

Words fail me in describing the Saturday night class banquet. Rusty went all out on the decorations. They were swell. The marine touch of the fish net all around the four walls, with huge six-foot red letters spelling out our class numerals on the long walls, with 1916 in figures across the short walls, were masterpieces of decoration. The red and silver balloons gave a gay touch to the background. Oh, but the foreground! The waitresses were dressed in white, with red and grey arm-length gloves made from Barney Gor-

1916 Continued

don's hosiery. Stockings matched this effect, and the girls and the bar boys wore class hats during the meals. The setting was festive and gay. A pile of favors — eighteen of them collected through the efforts of Hen Shepard — was at each place. All that was missing was a basket in which to carry the loot. Rusty had our class song and "Take Me Back to Tech," and "The M.I.T. Stein Song" orchestrated for ten different-toned cowbells. There was one at each place, and as we sang, we rang. It was great! The music came from a loud-speaking record player which practically deafened those at the head table.

Tom Holden, as usual, enjoyed the proceedings at the Saturday night banquet. His boyish enthusiasm for events of this kind is astounding. An observer saw him awake long enough to inquire for what gambling purpose dollar bills were being collected and cards being distributed. Then he relapsed into peaceful slumber.

A tribute of silence, during which old tunes were played, was paid to our departed classmates. Let us never forget them.

Athletic prizes were awarded for various golf and tennis accomplishments. — Rousing cheers of appreciation were given for each committee member and for Rusty's wife, who helped at home with the decorations. Steve Brophy gave a swell appeal for support and contributions for the Maclaurin Memorial. Rusty White ran a big raffle which paid the winner twenty dollars and incidentally helped to defray the cost of the decorations. The waitresses put on a special song number, and the colored bus boys did a snappy dance as sort of an extra dividend of entertainment. — The party adjourned to the taproom and porches for swapping stories and advice until the wee small hours. Except for Ralph Fletcher's skyrocket, the remainder of the evening was without staccato effect.

Sunday lunch was served in buffet style on the sunny terrace facing the bay. How did Bill Farthing and Bob Wilson get up last and get served first? — Additional athletic prizes, under the stewardship of committeeman Tom Berrigan, and door prizes were awarded at the conclusion of the meal. (Some of us saw two granite birdbaths furnished by Ralph Fletcher. We are wondering if Tom Berrigan can tell us what happened to the second birdbath.) — Officers were re-elected for another five years, and the balloting was punctuated by the zooming of DuPont's red and gray Gruman amphibian plane.

The inevitable farewells had to be said to those not going to Boston for Alumni Day. — Bill Barrett's charming wife and baby called for him. Lew Pratt took George Petit back to Hartford. Your Secretary and Steve Brophy paused en route to Boston to call on Charlie and Lois Lawrence and to have a tasty supper with Dave and Jack Patten in their 1660 Myles Standish house at Duxbury. It certainly was a pause that refreshed a couple of weary wanderers.

When we arrived at the Hotel Copley-Plaza at nine o'clock that evening, we found George and Mrs. Allen; Steve and Mrs. Berke; Walt, Frances, and Mrs. Binger; George Camp, his brother, and his brother's wife; Cy and Mrs. Guething and Ted; Rusty and Mrs. White; and Steve Whitney.

Monday, Alumni Day, was a big day for '16. Charles B. Breed '97, Head of the Department of Civil Engineering at the Institute, held open house for Course I, and C. Frank Allen '72, Emeritus Professor of Civil Engineering, dropped in while Jack Burbank, Charlie Lawrence, and Chuck Loomis were there. Then of course we called on Lobby and Pete, the gracious and loquacious deans. Some of us found out what present-day fraternity life lacks or doesn't lack at Technology.

Eventually, we breezed over to the lunch at Du Pont Court, where the gay umbrella tables had been reserved for the honored twenty-five-year Class. Among the wives we noticed Mrs. George Allen, Mrs. Walt Binger, Mrs. Wesley Blank, Mrs. Steve Brophy, Mrs. Arthur Caldwell, Mrs. Dan Comiskey, Mrs. Paul Duff, Mrs. Joe Duggan, Mrs. Ralph Fletcher, Mrs. Cy Guething, Mrs. Emory Kemp, Mrs. Dave Patten, Mrs. Stew Rowlett, Mrs. Henry Shepard, Mrs. Hy Ullian, Mrs. Porter Webber, Mrs. Rusty White, and Mrs. Steve Whitney. All the ladies were more or less in and out of Room 141, as was the rest of the gang. The wind literally knocked over the umbrellas. The food was good, however, the company grand, the weather clear.

After lunch, Class Day exercises were held across the campus. Steve Brophy gave the speech of the occasion. His talk was well received, and he put it over in spite of the squeal in the loud speakers.

At four o'clock the crowd adjourned to see the dedication of the Maclaurin Memorial. Jack Burbank, Dave Patten, and Rusty White drove to Boston and escorted Mrs. Maclaurin to the Institute. She looked very lovely and was adorned with orchids from the Class. Among the speakers was our Class President, Bill Farthing. It was an impressive occasion and a great credit to the Class. To Steve Brophy, Bill Farthing, Ralph Fletcher, Bob Wilson, and others, go our thanks for steering this memorial to a successful completion.

On June 13, Mrs. Maclaurin wrote to your committee: "I wish I could reach each member of the Class of '16 with a telepathic message to convey what no language can — the deep sense of gratitude we, as a family, have for the significant gift to Technology of the very beautiful inscription as a memorial to my beloved husband, an inscription carved into the very structure of the central building of Technology. There never has been any tribute to his memory comparable to it, and for the Maclaurin family the Class of 1916 will always hold a place apart for having conceived and presented such a gift to its alma mater to mark the first twenty-five years of the Institute's life in the new buildings on the Charles. The memorial has been executed with absolute perfection in the wording, placing, fine classic lettering, and workmanship.

"I send you heartfelt thanks for the exceedingly beautiful flowers sent to me by the Class, which, with the messages enclosed, touched me greatly. Ever most sincerely yours, Alice Maclaurin."

For the Alumni Dinner, June 9, at the Hotel Statler, more '16 men showed up than had been planned for, but the half-dozen late-comers were somehow jammed into the middle of the room in the midst of the '16 tables. Two of our three co-eds were at dinner — Charlotte Phelps Dodge of Chevy Chase, Md., married to P. V. Dodge '07; and Elizabeth Pattee of Boston. Paul Duff, the father of nine children, has a close runner-up in Mrs. Dodge, who has seven.

One of the events of the reunion was the discovery by Ralph Fletcher and Freeman Hatch that they are classmates. For years both have been attending skeet meets without knowing of their common bond.

This memorable reunion, which focused attention on our Class as the twenty-five-year reunioning Class, was especially significant as we were the last Class to be graduated from the old buildings. It was significant, also, because the dedication of the new buildings was part of our commencement exercises back in '16. — The principal speaker at the graduation exercises in Symphony Hall on Tuesday, June 10, was Bob Wilson, and, as we noted before, Steve Brophy was the Class Day speaker. Bill Farthing spoke at the dedication of the Maclaurin Memorial — so, all told, we had three principal speakers from our Class during the celebration.

Your committee had a grand time working for the successful reunion which we all enjoyed. Much of the success of the occasion, however, doubtless can be attributed to the committee of the whole, Bill Farthing's idea, which involved classmates' writing letters to other classmates, stimulating their interest and persuading them to attend. And so, from the committee, thanks to all of you.

Henry Shepard, who represents our Class for the M.I.T. Alumni Fund, calls attention to the fact that when these notes are being written only 71 contributors are listed this year as against 96 last year. After such an enjoyable reunion, we have to improve this record. Delinquent members should immediately send some contributions to the Institute, marking them for the Alumni Fund. The total amount of our class contribution is only about half what it should be. An extra effort is recommended before Christmas. — JAMES A. BURBANK, *Secretary*, The Travelers Insurance Company, Hartford, Conn. STEVEN R. BERKE, *Associate Secretary*, Coleman Brothers Corporation, 245 State Street, Boston, Mass.

1917

John Aleck Lunn figured prominently in Boston and Cambridge papers during the late spring, when an old family retainer passed away in Colorado and was reported as having left some of her savings

1917 Continued

to Al. The report made interesting reading, but careful analysis yielded the thought that by the time the state of Colorado had lost interest in the fund, Al would hardly have received enough to put him in the international financier class.

Clippings continue to come in noting the picturesque "tour across the organization chart" of Sears, Roebuck and Company by one E. P. Brooks. The illustrations are attractive and almost do justice to the subject. One clipping was forwarded to us by Charles E Locke '96, Alumni Secretary, and to our surprise, we found that it was sent him by Nelson C. Works, manager of the western municipal bond department of Paine Webber and Company at Chicago, and Secretary of the Technology Club of that city. Professor Locke was properly impressed.

Army and Navy promotions are still coming along. Allen F. Kingman of the Army War College has been advanced from major to colonel. Only your Secretary's inability to do the job thoroughly prevents this column from competing in part with the official directory. I am sure that we should all be glad to receive a little news with the promotion announcements, as we did last year from Frank Conaty in the letter we published in the June Review. As far as we are aware, nobody in the Class is as yet an admiral or a general. As soon as that honor is achieved, we shall suggest a special '17 edition of The Review. — RAYMOND STEVENS, *Secretary*, 30 Charles River Road, Cambridge, Mass. PHILIP E. HULBURD, *Assistant Secretary*, Phillips Exeter Academy, Exeter, N.H.

1919

We hope the Class has had a pleasant summer with interesting vacation experiences and pleasant memories. Your Secretary spent one week during July driving through Connecticut, Massachusetts, New Hampshire, and Maine, and during August he spent about ten days in California.

Congratulations are in order for Jimmy Reis, who was married to Mary Adams on May 14 in Los Angeles. Jimmy has given up mining and has left Tuolumne. At present he is making his home at 3317 West Fifth Street, Los Angeles. Jimmy honeymooned at Guadalajara, Mexico, and Tucson, Ariz. Jimmy writes: "Guadalajara is quite a beautiful town and has a population of over two hundred thousand. It is called the city of churches and has over fifty very fine large ones, many dating back to the sixteenth and seventeenth centuries. The surrounding country is rich and fertile, and the large corn fields are so well kept that if it were not for the mountains in the distance one might think he was in Iowa. There are many large estates and beautiful houses there and a surprising number of new American automobiles on the streets. I certainly was surprised to see so much wealth, as all the rest of Mexico, especially the west coast and northern states, seems so poverty stricken. At Manzanillo the water front was piled high with all kinds of boxes and bales of stuff, all destined for Mexico City and all marked 'Made in Japan.' Evidently there has been a great deal of trade between Mexico and Japan, as it would have taken several ships to land all the cargo that was piled up along the water front there." Best wishes for the future in your new undertakings, Jimmy!

George McCreery wrote on June 17 in regard to Alumni Day: "We made a fairly good showing at Alumni Day this year. The following men were present at the noon luncheon or at the Alumni Day dinner in the evening: Art Blake, Ed Farrand, Maurice Goodridge, Dick Holmgren, Jim Holt, Sam Kaufman, Stuart Kelsey, Harry Marodian, George Michelson, Gene Mirabelli, Arklay Richards, Hyman Selya, Duffy Slotnik, Leighton Smith, Carl Svenson, Max Untersee, Stan Weymouth, and, of course, your Secretary. You can see we had rather a good get-together, and I am sure everyone enjoyed the events of the day. We did, however, miss seeing a representation from other parts of the country, and with only three years to go until the twenty-fifth reunion, I suppose you should be giving some thought to bringing this fact to the class reunion committee. It also wouldn't hurt to recheck the exchequer and find out if something should be done during the next three years to bring same to a more substantial amount so that a real reunion could be put across. Some of the boys present thought it might be best to dun each member of the Class a minor sum for the next three years, so that the exchequer could be inflated.

"Maurice Goodridge told me that Edward F. Pierce, Jr., of Arlington, Va., has been rather ill. Maurice called on him while Ed was here in a Boston hospital. [Mr. Pierce died on August 10.]

"We shall receive information concerning the doings of Alumni Day in the class agent letter which is to come out shortly."

Your Secretary agrees with George that we should start now to make plans for our twenty-fifth reunion in June, 1944. Any suggestions from the Class as to the amounts and methods of raising money and the type of gift we should present to the Institute would be appreciated.

Your Secretary received a letter from Edward Adams Richardson, who lives at 1102 Linden Street, Bethelehem, Pa. He writes as follows: "Except for twenty months back in 1933 and 1934, during which I was in the unenviable position of being on furlough, I have been in the special engineering section of the advertising department (technical handbooks, primarily) of the Bethlehem Steel Company since January, 1925. The work also covers a variety of research. For example, I spent nearly a year gathering together and digesting and reducing to textbook form the latest data on soil mechanics for a sheet piling handbook. As a result of the knowledge thereby acquired, I have been consulted several times on foundation work on some very large projects of the company, primarily on clay. Notes on my work, particularly relating to methods for greatly reducing the cost of the Quoddy dams and increasing their security, appear in the *Proceedings* of the American Society of Civil Engineers. I am also regarded as an expert on any questions relating to the behavior of flat plates, either as bridge floors (concrete slabs) or as elements of structures. In part, this knowledge was gained as a result of my connection with the airplane business, in part as a result of studies of my own, and in part through my carrying out or criticizing research projects involving beams of thin sheet steel. My theories have stood up better on test than those normally found in treatises. I have handled the explanatory notes on steel metallurgy and have even contributed to the American Society for Metals notes on the behavior of metals from the point of view of the theory of solids. The steel barge department has frequently consulted me on problems of barge detailing and plate action. I have served the sales departments with engineering service in several cases, with satisfaction to all concerned. In one case I designed a metal link hose for a 50 per cent increase of pressure without changing material specification or size (simply by better detailing of the hose links) and then added an equal amount of strength by changing slightly the specification of material. Even members of the engineering departments and the development and research department are accustomed to consulting me on a wide variety of problems. For a time I served as standardization engineer for the design of a patented folding steel door we were building. In other words, though the routine is somewhat humdrum, there have been many special problems to make the job interesting.

"Outside of the office, I have done much. Perhaps it would be well first, however, to say that I am still unmarried. I maintain a home for my mother, now well along in years, and my brother George also lives with me.

"During the last few years, four United States patents have been issued to me, and two more are now on file. There are many other inventions which will be pushed later, perhaps. The first patent was issued on September 6, 1932, for a method of preparing fuels which are normally liquid for use in compression ignition engines or even in furnaces. The patent was simple, covering the maintenance of the fluid under pressure in excess of the critical pressure, while being heated to a temperature about or above the critical temperature, and then burning it. A paper published in 1932 by the Pennsylvania State College covering a meeting on oil and gas power gives considerable material on the subject. A later paper was presented at Pennsylvania State this last fall and received very favorable reception. The advantages, of which there are many, are fully discussed in the patent and the paper.

The second patent was issued for a basically new type of fuel injection valve for compression ignition engines or other injection-type devices. It provided for use

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of the process and was adapted to use as a metering device and also as an ordinary, cold-process valve in substitution for much more expensive valves. The distinguishing feature was the prevention of leakage and the use of the liquid itself as the prime part of the spring system. Such a valve requires no precision fits or tolerances of a few millionths of an inch such as have been used by valves of similar type. This valve was described in the symposium of last fall at Pennsylvania State.

"The next patent issued on September 24, 1940, related to a basically new type of heat insulation. By passing a slow stream of fluid from the cold to the hot face of a permeable insulation, I showed how the permeable body may have no heat flow through the cold face. This insulation was designed for catalyst chambers, cracking chambers, ordinary buildings, the insulation of automobile bodies, offsetting the effects of thermal radiation to metal roofs, and can be used in furnaces or other devices to secure protection of refractories from the washing effect of flames and from melting down of roofs of such as open-hearth furnaces. I have proposed making suits, the inside of which would be supplied with air by suitable hose. The suits would permit men to work indefinitely, where necessary, inside such things as furnaces. Other applications will be obvious. The suits could be lighter than the asbestos ones now in use for emergency exposure to high temperatures.

"The fourth patent was issued on March 18, and it covers a vastly improved alkali-cyanide process for nitrogen fixation, and apparatus for effecting that and related types of chemical reactions which involve the interaction of a melt body and a gas-like body. This is particularly applicable when the reaction takes place at high temperature, is highly endothermic, and requires close temperature control for satisfactory operation. The furnace invention is much more broadly covered in a patent application now pending.

"In addition, I have devised methods for stabilizing suspension bridges, which I expect to patent. The methods are quite simple. I have served as adviser to the engineers at Bethlehem on the causes of the Tacoma bridge failure, in view of the work I have done on vibrations and aerodynamics.

"Also, I have on file a patent application covering methods for welding hardened materials so as to retain the general hardness and secure equivalent hardness in the joint material, all without quenching and tempering (or aging) operations afterward. This was originally designed for securing full strength structures of very thin material as strong as two hundred and fifty thousand pounds a square inch ultimate when used in airplane construction, or in other structures.

"I have devised means for quenching materials for heat-treating, where it is desired to secure full control of the amount and intensity of the quench. My plan makes possible the securing of heat treatments by the methods described by Bain, requiring rapid quenching to a desired transformation temperature, then holding at said transformation temperature.

"A paper of mine entitled 'Controlling the Nation's Business,' showing the why and wherefore of the depression and ways to avoid such in the future, was published in the January, 1939, *Econometrica*. I have since found that Mordecai Ezekiel, economic adviser to the Secretary of Agriculture, read the manuscript and approved it for publication. I have corresponded with him and understand that he will give full attention to my theories in his statistical studies now in progress. I have published other articles, papers, and letters on this subject and related ones.

"In addition, I have written letters on various subjects to the New York *Times*, many of which have been published. I keep after the various government officials as occasion arises, and I was one of the very few nonlawyers to contribute to the open hearings of the patent legislation committee of the House of Representatives, pointing out how unnecessary and severe some of the proposed steps were, and showing the limitations under the Constitution for Congress to pass such legislation, while pointing out acceptable and effective substitutes. I found many of the lawyers were in agreement with me.

"I have also given attention to the devising and detailing of the design and methods of construction of much lighter artillery and other weapons than are available at present to any army anywhere. That peculiar inertia of military force commanders which is such a boon to a Hitler has prevented more than perfunctory consideration so far.

"My studies have covered whatever has been necessary to get results, so I am not unacquainted with such things as thermodynamics applied to chemistry and a variety of other things rather foreign to my mechanical engineering training.

"I have yet to go to a Technology reunion. Perhaps I may be at the twenty-fifth; I shall surely try to make that one. For personal activities, I prefer walking and tramping in some moderation, and I swim occasionally. My home machine shop often calls for attention in the making up of experimental apparatus. —The American Legion and the American Society of Mechanical Engineers are my two principal societies."

I have a reply card from J. F. Lavagnino, whose present address is 15 Fresno Street, San Francisco. He is at present engaged in building reconstruction, remodeling apartment houses that he has acquired.

I have also had a card from Frank M. Babbitt, 3 Fort Street, Fairhaven, Mass., who manufactures loom crankshafts. He has two boys and one girl. His hobby is agriculture — high-cost products.

Roderic L. Bent replies from 59 Prospect Street, Gardner, Mass. He is with Bent and Brothers, Inc., furniture reproducers. He has a son, Gardner L., who is a freshman at the Institute, and another son, Jack E., who is a junior in high school. Rod plays tennis, fishes, hunts birds, and skis. His travels include Maine and New Brunswick. Rod has contacted Sandy McMorran '21 recently.

William F. Bennett, Jr., writes from 45 Coolidge Road, West Medford, Mass., where he is in the wholesale plumbing supplies business. He has three boys — eighteen, seventeen, and sixteen; and two girls — thirteen and ten. His hobby is powerboating (cruising).

Wayland S. Bailey writes from Norwell, Mass. He is assistant professor in mechanical engineering at Northeastern University. He is president of the Norwell Parent-Teachers' Association and is busy giving a defense course in metallography and with defense work. He has two children: a girl, thirteen, and a boy, nine. Sailing is his hobby.

F. S. Adams, Post Office Box 482, Stockbridge, Mass., is a construction engineer. His previous jobs were in Puerto Rico and Mexico. He is interested in photography, and he recently contacted Morton A. Smith of Main Street, Great Barrington, Mass.

The following changes of address have been reported by the Register of Former Students: Aubrey P. Ames is with the Standard-Vacuum Oil Company, Post Office Box 436, Manila, P. I. Pierre Blouke has moved from Washington, D.C., to 1810 North Orleans Street, Chicago, Ill. Robert S. Bolan is now at 139 Hazelmere Road, New Britain, Conn. Laurence W. Cartland has moved from Millville, N.J., to 146 Salmon Street, Manchester, N.H.

Henry L. Cassidy's address is changed from Dobbs Ferry, N.Y., to 86 Hillside Terrace, Irvington-on-Hudson, N.Y. Richard H. Coombs is at 3241 Stevens Avenue, South, Minneapolis, Minn. Huron D. Corthell's new address is 1550 Leavenworth, San Francisco, Calif. Eli Ettlinger has moved to 1110 Pleasant, Oak Hill, Ill.

Roger T. Hall is now at 532 20th Street, Northwest, Washington, D.C. E. Robert Helmrich's new address is Box 165E1, Route 1, Los Altos, Calif. Cho-Pin Hsueh is now at 44 Passage, 1285 Avenue Joffre, Shanghai, China. Major George A. Irwin is at 15 Stratford Road, Andover, Mass. Lieutenant Colonel Robert R. Litehiser has moved from Columbus, Ohio, to 16 94th Street, Brooklyn, N.Y.

Lieutenant Colonel Howard S. MacKirdy's new address is R.O.T.C., Kansas State College of Agriculture and Applied Science, Manhattan, Kansas. Maurice A. Michaels is at 5420 Netherland Avenue, Riverdale-on-Hudson, N.Y. Bernard S. Moore, Jr., has moved from Syracuse to R.D. 1, Fayetteville, N.Y. Arthur M. O'Connor's address has been changed from Revere, Mass., to Kingston, N.H.

The address we now have for Chen-Chi Pan is Number 5 Passage 288, Route Prosper Paris, Shanghai, China. Miss Clara Poppic is at 1375 38th Avenue, San Francisco, Calif. Harold G. Pratt has moved from South Lancaster to Lancaster, Mass. James G. Strobridge has moved from New York to 2100 Connecticut Avenue, Washington, D.C.

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W. Pratt Thomas is with Pratt's Fresh Frozen Foods, Inc., 513 West 16th Street, New York, N.Y. Commander Henry E. Wilson is now stationed at the Navy Yard, Boston, Mass. Lester Wolfe has moved from Springdale, Conn., to 1700 Grand Concourse, New York, N.Y. Charles F. Yao is at Chung Hwa Steel Products Company, 89 Foochow Road, Shanghai, China.

The final figures for the M.I.T. Alumni Fund of 1940–1941 showed a total of 7,867 contributors with a gross of $65,-399.85. The objective this year is 10,000 contributors averaging $15 each, or $150,-000. In order to maintain an average of $15, there will have to be as many $25 contributions as there are $5 contributions. Let's have the Class of '19 assist in making the 1941–1942 Fund a success. An encouraging increase is being shown this year. As of August 15, our Class had contributed $691, which is 23 per cent of our quota of $2,985; and 83 members had contributed, which is 50 per cent of our quota of 166. While this is a considerable improvement over last year, our Class still has a long way to go to do its part in putting over the Fund. Members of the Class who have not yet contributed are urged to do so at once.

According to an announcement by T. K. Stevenson of the Electrical Research Products, Inc., Timothy E. Shea '19, vice-president in charge of engineering, has been granted an indefinite leave of absence to participate in important studies for the National Defense Research Committee.

A card from Herbert W. Best, Leetes Island, Guilford, Conn., reveals that he is assistant professor of mechanical engineering at Yale University. He spent six weeks last fall in California on co-operative work, developing methods for evaluating knock characteristics of fuels and engines for the Co-operative Fuels Research Committee. He is married but has no children.

B. H. Bristol writes from 28 Union Street, Foxboro, Mass., that he is married and has two children. His hobbies are stamps, fishing, and golf. He works for the Foxboro Company and travels on business. He recently contacted Marshall B. Lee.

The Tacoma, Wash., *Tribune* had a long article about Charles A. Chayne and his activities as head of the engineering department of the Buick division of General Motors Corporation and as chief engineer of the aviation engine department. Since our column quoted a similar story about Chayne in the May issue of The Review, we are not going to repeat the story.

Your Secretary had dinner in Los Angeles with Jimmy Reis on September 11. We had a most enjoyable evening talking over old times. Jimmy wants his friends to write to him at 3317 West 5th Street, Los Angeles, Calif. — EUGENE R. SMOLEY, *Secretary*, The Lummus Company, 420 Lexington Avenue, New York, N.Y. GEORGE W. MCCREERY, *Assistant Secretary*, 131 Clarendon Street, Boston, Mass.

1920

Kenneth B. White paid me a call, and I am here to tell you he hasn't changed a bit. — He's just as full of vim and vigor as ever. He is still operating his consulting engineering service from New York, and he told me that Bradford J. Clark was a sales engineer for the Permutit Company, with office in the McGraw-Hill Building in New York. White mentioned that he had seen Chuck Reed, who is still as busy as ever in Cleveland as head of the Forbes Varnish Company, and Harold Bibber, who is now the proud father of a son born early last spring.

I received word from Ed Farrow, who, as many of you no doubt know, is a big shot with the Eastman Kodak Company in Rochester. Ed was made production manager of this great company this spring, having been assistant production manager for a number of years. His promotion comes as the reward of a brilliant record with the company for many years.

I am also pleased to pass along to you the contents of a very interesting letter from Bunt Murphy, whose present address is Palisade Avenue at 261st Street, Riverdale-on-Hudson, N.Y. Bunt says: ". . . I guess the last time I wrote you, I was in Connecticut. Three years ago we left Hartford and came to N.Y. — still in the same game, child welfare. This time I have charge of 650 negro boys and girls. The outfit — the Colored Orphan Asylum — is an old one, having been started way back in 1836 by Quakers. We have 200 of the youngsters in our Institution in Riverdale and the other 450 in foster homes. If you think keeping an ordinary family in shoes and pants and dresses, and fed, doctored, and schooled is tough, just try raising money to support a family of 650, and you'll understand why I'm aged and bald!

"Not satisfied with 650 wards, we recently increased our family by the addition of a boy — Roger Anthony. This is our second, and coming when the first boy is ten years old makes us think that we really have two only-children.

"With the shift of the war to the eastern Mediterranean we are quite sick; all the places we visited and worked in seem, for the time, likely to fall under Hitler's heel, and all those poor devils we helped re-habilitate are about to — or in some cases already have — become slaves. Guess I'll have to go back and do my job over again."

Edward Ellsberg, who took the master's degree with our Class at the end of the last War, has steadily grown in prominence as an author as well as lecturer and consulting engineer. A very interesting sketch of his activities appeared in the New York *Times* book review section, last June.

John Lyons, who has been living in Medford, Mass., was recently married to Frances Noseworthy, daughter of Mr. and Mrs. Frederick Noseworthy of Malden. — Tony Anable, who is advertising manager for the Dorr Company in New York, was married recently to Gloria Hollister, widely known zoologist and explorer, of New York City, who now holds the position of research associate with William Beebe, director of the New York Zoological Society. On behalf of the entire Class, permit me to express heartiest congratulations, John and Tony!

Perk Bugbee has been receiving considerable prominence in the news as general manager of the National Fire Protection Association, a world-wide organization with over 5,000 members in thirty-seven countries. During the course of his work, Perk has visited every large city in the United States and Canada and is at present on the Pacific Coast on an extended trip. He is consultant on fire administration for the International Managers' Association, a member of the executive committee of the national fire waste council of the United States Chamber of Commerce, and an honorary member of many fire chiefs' organizations throughout the country. He is author of numerous articles on fire protection and has made hundreds of addresses in all parts of the United States. A story about Perk ran in a recent issue of the New York *Journal of Commerce and Commercial*.

Chick Dana has left Boston for 2 Broadway, New York City. Freeman Dyke is with Wheeling Steel Corporation in Steubenville, Ohio. Bill Freeman's address is Runnymede Farm, R.F.D. No. 1, Vienna, Va. Lyman Whitten is a major in the Air Corps and is located in Washington. Ed Cochrane is a captain with the Bureau of Ships of the Navy Department in Washington. Herb Dorr has left Massachusetts and is at 73 Janssen Place, Kansas City, Mo.

Ed Ryer is doing a fine job of lining up the Class for the Alumni Fund. If any of you haven't seen his letters, all I need to say is that our relative standing could be materially improved, and I hope it will be before the final figures are in. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

1921

Hello, everybody, and welcome to our twenty-first year of notes on the activities of the gang. Our own personal thanks go along with the official expression of appreciation from the Institute on your support of the Alumni Fund, through which you are now receiving The Review. Unfortunately, returns from the Class have not kept up to our standard of performance, and what looks like an easy quota has not been reached. You who are reading these notes have, of course, done your part splendidly by contributing early. Won't you remind those others of the Class whom you may see that the first issue of The Review has been published and their subscriptions to the Fund should go to Cambridge at once in order for them to receive future issues? Remind them to support the Institute and all that Technology means to the nation and to us.

We're just bursting to get on with news of our twentieth reunion party at the Griswold on Eastern Point, New London, Conn., on June 6, 7, and 8, at Alumni Day, and even at Commencement. Exactly one hundred members of the Class par-

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ticipated, some with their better halves and others of the family, in preparation for the all-out party in 1946. Sons of Johnny Barriger, George Chutter, Ed Farrand, and George Owens came along to get a line on what their future reunions might be. Harry Field captured top honors for coming the longest distance, with his special trip from Honolulu. Course VI-A again invited William H. Timbie, Professor of Electrical Engineering and Industrial Practice, who accepted with such alacrity as to be most complimentary.

The first contingent arrived at the Griswold on Friday afternoon and were met by our genial Secretary, host, president pro tem, and sole organizer and operator of the entire shindig, Ray St. Laurent. Be it said here that to Ray go the laurels for thinking up and successfully carrying out the best party we have had. Golf attracted a few before dinner. Afterward the second floor was replete with men filling room after room and avidly devouring various impromptu technical lectures by members of each little seminar. Long will be remembered Paul Rutherford's masterful essay on the British Navy, Timbie on practical sanitation, Chief Myers on simplified transportation, and the joint contribution of Fish Gilbert and Buckner toward saving utilities from utter ruin. Augmented by a new recruit from California, the quinquennial meeting of the Cubists Club held forth well nigh into the bracing New England dawn.

Saturday brought a steady stream of new faces, submarines from New London, the golf tournament, swimming, the Lew Hurley–Don Farrand fishing cruise on the sound, and Fred Kowarsky — the Caldwell clouter — meeting all comers on the clay courts. Bob Miller was everywhere all the time, recording candid stills and colored movies for posterity. Evening brought the grand banquet and Chris Nelson's stirring talk on his recent month's stay in the British Isles. Golf prizes went to a select few, from Ollie Bardes to Sumner Hayward. Harry Field exhibited a technicolor talkie of Hawaii, which led some to vote it the locale for five years hence. Horse racing and a midnight buffet were the build-up for the *pièce de résistance*, the storytelling contest with Bill Timbie as judge. Jack Crowley and Phil Coffin met in the finals, Phil winning by the width of a street and the height of two houses facing across it!

The last day at New London brought more recruits and a continuation of activities until the group took leave, most of them going to Cambridge for Alumni Day. At Dr. Compton's dinner on Sunday evening at the Engineers Club, Boston, eight from the Class formed the largest delegation: Max Burckett, President of the M.I.T. Club of Northern New Jersey; Elmer Campbell, President of the M.I.T. Club of Western Maine; Ed Farrand, former Secretary of the Technology Club of Chicago; Irv Jakobson, Honorary Secretary from New York City; Hal Lockey, Honorary Secretary from Great Barrington, Mass.; Warrie Norton, retiring Vice-President of the Alumni Association; Whit Spaulding, President of the M.I.T. Association of Baltimore; and your Assistant Secretary.

Alumni Day saw additional members of the clan convene at luncheon in Du Pont Court. Josh Crosby was on the committee for the stein party banquet at the Statler that evening. Ours was a tired but happy group that finally said good-by at the close of the day.

Commencement on Tuesday was of special significance not only as the twentieth anniversary of our commencement but also for the awarding of the degree of master of science in textile technology, the first time this degree has ever been awarded by the Institute, to Walter Hamburger. We still haven't recovered from the surprise of Walt's announcement at dinner the night before that he was going to get another degree. Shades of the original unpredictable Patsy. Who'll bet a wheel chair to a pair of crutches that one of the gang will win his Sc.D. in 1961!

For you who want a list of those in the class picture, here they are: Front row, seated on floor, left to right: Chutter, Povah, Kiley, V. C. Cole, Payson, St. Laurent, Owens ,R. M. Shaw, Wood, Williams, Conant, R. J. Spitz, McGrath, A. D. Harvey, C. B. Nelson, Myers; second row: Parsons, M. C. Rose, Dube, Castonguay, S. M. Jones, Coffin, Buckner, Rowell, McGuire, Timbie, E. L. Rose, Gilbert, Farrand, C. A. Clarke, Stose, D. T. Brown, Norton, Emery, Goff, R. S. Clark, Greene; third row: R. F. Miller, Dennison, Whipple, Ferdinand, Crowley, Jenny, Spaulding, Vitalini, Kurth, Hayward, Townend, Mattson, Rutherford, Giddens, Knight, Zoller, Loesch, Peirce; back row: Jakobson, Lloyd, Hassold, Wilson, Healy, Lurie, Field, Silverstein, Kowarsky, Clarkson, Wald, Schein, Burckett, LeFevre, Wakeman, Stuart.

Others not in the picture were: E. T. Adams, Bardes, Booth, Burroughs, Campbell, Crosby, L. B. Davis, Ellis, Fargo, Hanson, Hamburger, Hatheway, Homerberg, Howard, Hurley, Kaufman, Kittredge, Kohl, Lane, Lockey, MacDonald, Morse, Patton, Randall, Rood, Rule, Sherman, Thomson, and Waterman.

Notice has been received from the Alumni Office of the death of James M. Young, I, on October 17, 1939. Captain Young had been at Fort Belvoir, Va., with the United States Army Board of Engineers. Paul W. Fletcher, II, died on August 15, 1940, while serving as commander, Naval Torpedo Station, Newport, R.I. Our sincerest sympathy is extended to their families on behalf of the Class.

A number of promotions have come to men in service, including the rank of colonel for George C. Lull, VII; that of lieutenant colonel for John M. Johnson, II, James B. Newman, I, and Girard B. Troland, I; the rank of major for David A. Newcomer, I; and captain for Victor Phaneuf, I. It is now lieutenant for Fred L. Raymond, XV, who has deserted Revere for the United States Naval Base at Cavite, P.I. — and Dana A. Barnes wrote to us from Santa Barbara, Calif., that he now has the title of professor. — Just as we go to press, the New York *Herald Tribune* book section devotes the whole front page to an enthusiastic review of Dave Woodbury's new book *The Colorado Conquest*.

Many changes of address arrived during the summer, and we shall continue to list them so you can keep your directory up to date: Adolph H. Aronson, V, 240 East 18th Street, Brooklyn, N.Y.; George H. Atkinson, X, 1131 Hardesty Boulevard, Akron, Ohio; H. duPont Baldwin, II, Aircraft and Marine Specialty Company, Inc., 302 South Central Avenue, Baltimore, Md.; John W. Barriger, 3d, XV, Western Carriers Conference Committee, Chicago, Ill.; Stuart E. Bradford, I, Technology Club of New York, 24 East 39th Street, New York City; J. Morton Briggs, VI, 2619 39th Street, Northwest, Des Moines, Iowa; Herman Broockmann, I, 415 Newton Street, Fairmont, W.Va.; Tristram J. Campbell, II, Bendix Radio Corporation, Towson, Md.; Lansing T. Carpenter, XV, 6 West Market Street, Wilkes-Barre, Pa.; Captain Asher Z. Cohen, X, 51st Ordnance Company, Delaware Ordnance Depot, Pedricktown, N.J.; Carl M. Cohen, X, 36 West 44th Street, New York City; John S. Cummings, VI, 115 Barnard Avenue, Watertown, Mass.; Arnold R. Davis, X, Lockwood Road, Riverside, Conn.; Isaac Dougherty, V, Associated Chemists, Inc., North Collins, N.Y.; John H. Driggs, XV, 1834 Lyndale Avenue, Memphis, Tenn.; James L. Entwistle, VI, 43 Church Street, Pawtucket, R.I.; Ernest R. Gordon, XII, Gold Coast Banket Arears Ltd., Tarkwa, Gold Coast Colony, West Africa; Walter C. Hagerton, VI, 26 Sycamore Street, Somerville, Mass.; Mark V. Hamburger, X, Sage-Allen and Company, Inc., 896 Main Street, Hartford, Conn.; Frank E. Huggins, Jr., 140 Cayuga Road, Williamsville, N.Y.; John T. Hull, Hotel Warren, Worcester, Mass.; Paul B. Hunter, II, Sunny Brook Road, Basking Ridge, N.J.

New addresses have also been received for: Karl Jetter, 1330 Commonwealth Avenue, Allston, Mass.; James LeGrand, I, H. K. Ferguson Company, Hanna Building, Cleveland, Ohio; Gordon M. Leland, 72 Barrow Street, New York, N.Y.; Donald B. McGuire, VI, 13 Courtland Place, Middletown, N.Y.; Howard F. MacMillin, II, Box 151, Mount Gilead, Ohio; Robert F. Miller, XV, 2426 East Erie Avenue, Lorain, Ohio; Marshall G. Munce, II, 140 Rafton Road, York, Pa.; Isadore H. Rogovin, XIII, 59 Fellsmere Road, Newton Centre, Mass.; Eugene W. Rudow, X, Scientific Supplies Company, 122 Jackson Street, Seattle, Wash.; Edgar S. Russell, II, 2903 Estrella, Tampa, Fla.; Lieutenant Colonel Stanley L. Scott, I, Cotton Exchange Building, Dallas, Texas; Oscar B. Sias, 119 Century Street, West Medford, Mass.; Louis D. Striebel, II, 1 Forestdale Avenue, Calumet City, Ill.; Perry R. Taylor, XIII-A, 1211 South 25th Street, Arlington, Va.; Herbert V. Thaden, II, Duramold Aircraft Corporation, 542 West 52d Street, New York City; Michael Treschow, XIII, 333 Las Casas Avenue, Pacific Palisades, Calif.; Harry Victor, IX-B, M. W. Kellog Com-

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pany, 225 Broadway, New York City; David O. Woodbury, VI-A, 1273 California Road, Eastchester, N.Y.; Dr. Merrill A. Youtz, V, R.F.D. No. 6, Lockland Station, Cincinnati, Ohio.

November is traditionally Thanksgiving time. We thank you for your many letters and news items. Let's have some more this year — now! — RAYMOND A. ST. LAURENT, *Secretary*, Rogers Paper Manufacturing Company, Manchester, Conn. CAROLE A. CLARKE, *Assistant Secretary*, International Telephone and Radio Manufacturing Corporation, 137 Varick Street, New York, N.Y.

1922

Hats off to Warren Ferguson for the time and effort he is spending in behalf of the Alumni Fund. We may show our appreciation more tangibly first by making sure that each of us has contributed to the Fund, and then by getting our classmates to send in their checks. Our class showing is not too good considering the length of time that we have been away from the Institute. We are below the average in our per cent of quota and just a trifle above the average in the per cent of contributors. Let's pat ourselves on the back by raising our percentages to an enviable level.

The New York *Journal of Commerce and Commercial* recently carried the story of the appointment of Leland M. Rice, V, as assistant sales manager of the organic chemicals department of American Cyanamid and Chemical Corporation. Rice went with the American Cyanamid Company after graduation and had outstanding success as a sales engineer introducing new industrial and organic chemicals as they were added to the line of Cyanamid products.

Harold R. Boyer, XV, is on leave from his position as president of the Allen Corporation of Detroit and has become chief of the manufacturing unit of the aircraft section of the Office of Production Management in Washington.

George R. Prout, VI-A, has been appointed manager of the industrial control division of the General Electric Company at Schenectady. He has been sales manager of this section since 1939.

In the March Review we reported that William C. Roberson, XV, had left New York, where he was sales representative for Lazard Freres and Company, for Fort Devens. In June it was reported that Major Roberson of the 101st Cavalry had been ordered to duty as aide to Hugh A. Drum, Lieutenant General and Commander of the First Army.

On July 3d, C. Ford Blanchard, XIII, formerly secretary and treasurer of Electric Power Associates, Inc., was graduated from the Army Industrial College in Washington with the rank of lieutenant in the United States Navy.

Bill Mueser has been commuting regularly to the West Coast in his work on army-base construction and other defense projects. He has taken time, however, to line up the New York class dinner which will be held on November 13. Similar dinners have been well attended in the past, and an enjoyable and refreshing evening is assured in the hospitable atmosphere of the Technology Club at 24 East 39th Street, New York, N.Y. More and more of the Class are planning their business trips to New York to coincide with these dinners, and you are urged to join the gang if possible.

The informal reunion at Alumni Day in June was very pleasant, and a more detailed story will appear in the next issue of The Review.

Discussion has already started about the reunion next June. The time has come to start thinking about it, talking it up, and resolving to be present. The class officers are making tentative plans, the regional secretaries are preparing to strike up the band, and comments and suggestions by everyone will be appreciated. — CLAYTON D. GROVER, *Secretary*, Whitehead Metal Products Company, Inc., 303 West Tenth Street, New York, N.Y. C. YARDLEY CHITTICK, *Assistant Secretary*, 77 Franklin Street, Boston, Mass.

1923

My notes in May about José C. Bertino and L. A. Igartua, prompted J. S. Loewus, another member of Course XIII, to write. He is a lieutenant, junior grade, in the United States Coast Guard stationed at Jacksonville. He says he practiced naval architecture after graduation, first with the Lighthouse Service and later with the Coast Guard, in which he was commissioned as a result of its second re-organization by President Roosevelt in 1939. His present assignment is instructor in chemical warfare defense.

Lem Tremaine went on a western trip for a summer vacation. A card from Jack Keck says that Lem is back, and we hope there will be details about the trip to publish later. — Chaplin Tyler, whose duties have been with the Du Pont organization, reported in May his assignment as director of public relations with Remington Arms Company, in Bridgeport.

Bob Hull is with the Cities Service Oil Company, and he told us that in February he was transferred from Boston to New York, where he is sales manager of the New York division. He is liivng at 45 Country Club Drive, Port Washington, N.Y.

Bobbie Burns — Dr. Burns to you — was in the United States last May, and several of us in Boston had the pleasure of a visit with him. Some of you may recall the interesting letter from Bob in the January issue, in which he told about his work and about living in Colombo, Ceylon. He is director of a government hydraulic laboratory there. I gathered that his trip was a busman's holiday. He went to Vancouver, thence east to Boston and Philadelphia, visiting important hydraulic laboratories both going and coming and renewing many old acquaintances and making new ones among leaders in the field of hydraulic research in both Canada and the United States. He expected to be back in Ceylon by the time these notes appear. Mrs. Burns made the trip with him, and except for the rush they were having a fine time.

Those I saw at Alumni Day, though not necessarily all of those who were either at the luncheon or dinner gatherings, were Burchard, Hugh Ferguson, Gerry Fitzgerald, Gelotte, Golding, Greenblatt, Greenough, George Johnson, Dave Kaufman, Murphy, Pennypacker, Proctor, Rue, Howard Russell, Tremaine, Wagner, Warren, Washburn, Willis, and Zimmerman.

J. C. Ruddell reports that he was promoted to colonel in the Coast Artillery Corps on June 26. He has been treasurer of the United States Military Academy at West Point since July 1, 1940. Describing his duties, he says it is his responsibility to feed the cadets (provide for 6,000 meals a day), clothe them (run the tailor shop), keep their clothes clean (supervise the laundry and dry cleaning plant), and take care of what cash they then have left. His daughter, Mary Elvia, was married the day after the West Point graduation to David C. Gauvreau, a lieutenant in the graduating class.

I have an address change indicating that P. P. Pratt is now an army lieutenant located in Chicago. He was formerly with the Postum Cereal Company at Battle Creek, Mich. Perhaps he'll tell us what his new duties are. — Nick Kane is now Captain Kane of the air corps at the Savannah Air Base. He writes a thumbnail sketch: "I have been on duty here since February as base technical inspector, which means I have charge of supervisory inspection of all airplanes, motors, instruments, armament, bombsights, and so on at this base. Oddly enough, I was in the air corps branch of the Reserve Officers' Training Corps at school in 1919, but later changed to the engineers. I accepted a reserve commission in the field artillery in 1929, however, have had three years of infantry in the National Guard, and over three years of Civilian Conservation Corps duty, both in construction and administration. Later I was transferred to the military police, and am now back to the air corps."

As might be expected, there are many transfers among our military classmates: Colonel H. H. Zornig is at Aberdeen Proving Ground, Md.; Colonel Alexander J. Stuart has moved from Alexandria, Va., to Brooklyn, N.Y.; Lieutenant Colonel Frank J. Atwood from Fort Knox, Ky., to the office of chief of ordnance, Washington, D.C.; Lieutenant Colonel Asa H. Skinner from Governor's Island, N.Y., to the Erie Ordnance Depot at La Carne, Ohio; Lieutenant Colonel William E. R. Covell from Crossett, Ark., to Washington; Lieutenant Colonel Robert H. Lee from Washington to Richmond, Va.; Lieutenant Colonel Ralph S. Chavin from Dover, N.J., to the ordnance plant at Ravenna, Ohio; Major Walter E. Richards from Manchester, N.H., to the River Works plant of the General Electric Company at West Lynn, Mass.; Major Dwight E. Aultman from Oklahoma City to Norman, Okla.; Major Clark Kittrell from Fort Peck, Mont., to the Second New Orleans Engi-

1923 Continued

neer District; and Captain Marshall E. Darby from Baltimore to the Office of National Guard, Washington. — HORATIO L. BOND, *Secretary*, 457 Washington Street, Braintree, Mass. JOHN M. KECK, *Assistant Secretary*, 207 Bloomfield Avenue, Bloomfield, N.J.

1924

The summer season has been good to the Secretary, bringing a succession of letters, visits, and news of the Class. Earliest was a card from Paul Cardinal indicating that he and his family, consisting of Mrs. Cardinal, three boys, and three girls, are now living at 195 Midland Avenue, Montclair, N.J. Paul is still selling vitamins as fast as Hoffmann-LaRoche, Inc., can make them. Shortly after Paul's card, a letter from Max Ilfeld arrived from Taos, N.M. Max, who has a son entering the Institute this year, is in the hardware business in Taos after many years of civil engineering about the country.

Don Fife, vacationing on Cape Cod, spent a short time with the Secretary this summer. Don has been in Washington for five years, where he installed and now has charge of the air-conditioning system in the Capitol buildings. — Bill Correale, who is acting and deputy commissioner of water supply, gas, and electricity for New York, reports a recent meeting with Ed Jagger, who is now field secretary for the American Society of Civil Engineers. Ed is located at 33 West 39th Street, New York City, and expects to visit many members of the Class during his travels about the country.

Anatole Gruehr was a midsummer luncheon companion of the Secretary, and he reported that Bill Appleton had appeared recently with the gold oak-leaves of a major. Bill was then stationed at Governor's Island in New York.

Frank O'Neil was another summer visitor during his vacation at Marblehead. Frank is secretary of the Western Foundry Company of Chicago. He and Jack Stanton, who is with the First Corps Area constructing quartermaster at Boston, spent a few hours together.

Bransford Crenshaw, writing from St. Louis, informed the Alumni Office that he is located at the Scullin Steel Company at 6700 Manchester Avenue, and that his home address is 331 Orchard Avenue, Webster Groves, Mo.

Chick Kane continues to be very busy with his dual jobs of running the Alumni Fund and taking part in Institute administration. As far as the Fund is concerned, he and George Knight have done an excellent job for '24 and are hoping to better last year's good record during the coming season.

The Class was well represented at the big Alumni Day dinner in June. The roster showed the following names: Avery Ashdown, Blay Atherton, Frank Barrett, Phil Bates, Cy Haller, Maynard Harris, Harold Hazen, Richard G. Herd, Chick Kane, Andy Kellogg, Del Kendall, George Knight, Bill Rivers (from Calcutta for the distance prize), Jack Stanton, Herb Stewart, and George Swift, plus a few others whose names did not get into the official program. — FRANCIS A. BARRETT, *General Secretary*, 50 Oliver Street, Boston, Mass.

1925

A number of interesting clippings are on hand, but let's start with the small informal reunion which took place at the University Club in Chicago on June 5.

Your Secretary was in Chicago on a business trip, and he took advantage of the opportunity to get in touch with the twenty-odd '25 men who live in that city or its vicinity. Of these, five were able to come to the Club. They were: Tony Lauria of Sears, Roebuck and Company; Jim Elliot of the Link-Belt Company; Joe Russell of the General Electric Company's plastics division; Dan Keck, the Kimberley-Clark Corporation's Chicago manager; and Louis Sheldon, a patent attorney.

During and after the dinner many reminiscences were exchanged, and inquiries were made concerning the whereabouts of other classmates. Among those mentioned were Archie Read '24, who is in the real estate business in Little Rock, Ark.; Guy Frisbie '26, who is with Metropolitan Life Insurance Company in Chicago; Eddie Booth, who is in Marshalltown, Iowa, with the Lennox Furnace Company; and Irving Gannon '30, who, when last heard from, was with the Ohio Boxboard Company, at Rittman, Ohio.

After two or three hours of enjoyable conversation, we adjourned to Chinatown. Gerald Moye, who, in addition to having attended the M.I.T., holds degrees from the University of Detroit and Loyola University, is the secretary of the On Leong Tong, the position carrying with it the popular title of "Mayor of Chinatown." All of us except Dan Keck, who had to leave early, visited the tong headquarters with Gerald, who explained many of the Chinese practices and customs. After discussing the war in China and many other subjects on which Gerald was well informed, we finally broke up, voting it an evening well spent and worth repeating.

The story of your Secretary's visit to Chicago would not be complete without the mention of a few additional items. Ed Applegate, who has been assistant electrical engineer of the Kedze plant of the Crane Company for nearly two years, was unable to attend the general get-together because of a wedding anniversary date on that night, so he and I had a private reunion on the previous evening. After a steak dinner we went to the Chicago production of *Hellzapoppin*, and in between had a general good time recounting various experiences to one another. Ed has had a varied career, having worked in New Mexico and Alaska and with a large meat-packing firm in Chicago before making his present connection. Like all the large manufacturing firms in the Chicago area, Ed's company is running a heavy schedule, and Ed announced with despair that it looked very much as though he would get no vacation this year. There is no great hope for one in the future, either.

Bill Steinwedell was unable to attend the meeting, but on his return from the trip which was the cause of his absence, a dinner date at the Palmer House was arranged. Bill and his wife acted as host and hostess to your Secretary.

Fred Grantham, in a telephone conversation, expressed regrets at his inability to attend the meeting because of the pressure of business. He has recently joined the Infra-Red Equipment Corporation and is working all hours on his new job. He expressed the hope that the dinner he was missing would not be the last of the sort held in that vicinity, as he would like very much to get together with us on the next such occasion.

An announcement from the Army Industrial College in Washington, D.C., states that Myron Doucette, a major, was graduated from that school on July 3 of this year. A letter from Henry Sachs, now a major, who was graduated from the same college last December, reads in part as follows: "I am still fighting the battle of Washington, but since graduation from the Army Industrial College I have been moved over to the office of the chief of ordnance, where I'm giving my all to the ammunition division. And who should be our statistical brains but Ralph Ilsley? 'Rah for good old '25!"

We have two items concerning Mrs. Mabel Macferran Rockwell, but as both are very lengthy I am going to quote in part from only one of them, contained in a column entitled "Today's Profile," a United Press feature which appeared in the Carthage, Mo., *Democrat*. "At present she is doing her bit for national defense as head production research engineer at Lockheed Aircraft Manufacturing Company, Burbank, California, where she directs the work of 20 men.

"Her father, an electrical engineer, and her mother, who was graduated in science, encouraged her to enter the electrical field. After a year at Bryn Mawr College she enrolled in M.I.T., getting her Electrical Engineering degree in 1925. A fellowship in Stanford University gave her the opportunity to do research work in its million-volt laboratory, and in 1926 she took her Master's degree."

After five years as technical assistant to the operating engineer of the Southern California Edison Company, Mrs. Rockwell had an important part in designing the electrical power system for the metropolitan water district of Los Angeles. "At the conclusion of this project," the clipping resumes, "she carried on consulting work, and became consulting electrical engineer for Lockheed."

The rest of the item deals with her reactions to a woman's position in scientific work and her preferences in the lines of relaxation and recreation. We gather from this and the other release that, Lockheed is fortunate to have so capable an engineer holding this important position, which covers not only straight electrical work but many other related problems regarding manufacturing and production. — Another clipping concerns the already

1925 Continued

reported appointment of Malcolm G. Davis, I, as vice-president in charge of rates and rate research for the Atlantic Utility Service Corporation division of the Associate Gas and Electric system.

Obie Denison '11, secretary of the Worcester Chamber of Commerce, on the alert as ever for items concerning Technology men, sends in a clipping mentioning, among other things, that Ralph F. Gow, XV, chairman of the Worcester Y.M.C.A. educational division's governing board, presided at the Worcester branch of Northeastern University's commencement exercises on June 11. Ralph is connected with the Norton Company in that city.

The *VI-A News* last May contained the following item: "H. B. Smith, '25 has been seen about the Institute quite frequently of late. An engineer with the Niagara Hudson Power Company, Smith has been working on the network analyzer. You who would like the impressions of a power man of many years experience will find him on the third floor of building ten."

The Boston *Globe* of August 14 carried the following announcement: "Mrs. Paul Julian Regan of Alameda, California, announces the engagement of her daughter, Miss Ursula Regan, to Francis W. McGinnis, of Philadelphia, son of Mrs. Alexander F. McGinnis of Boston. . . . Mr. McGinnis is a graduate of M.I.T., and later studied at Columbia University and Temple University Law School. Wedding plans will be completed as soon as Mrs. McGinnis and another son, Dr. George McGinnis, arrive from California."

The last time Frank was heard from directly, he was with the United States Department of Agriculture, working on the food stamp plan in Baltimore. He had already left that city, however, when we were there a year ago last July, and this is the first news we have had of him since then. He had formerly been a sales engineer in the tube-lighting business. We hope to hear from him directly soon.

A short but cheering item was received from Edward L. Bateman under the date of July 14 in Johannesburg, South Africa: "Glen is at present in active service with the twenty-fourth bomber squadron of the South African Air Force in Egypt. So far I am glad to say he has come out all right and that he was recently appointed a captain." — Readers of these notes will recall that Glen, although beyond the usual age for military aviators, entered the air force at the start of the war, and because of his private flying experience was qualified to go on active duty. His narrow escape in a plane riddled with bullets was recounted in the November, 1940, issue of The Review. — HOLLIS F. WARE, *General Secretary*, 3 Aquavia Road, Medford, Mass. F. LEROY FOSTER, *Assistant Secretary*, Room 6-202, M.I.T., Cambridge, Mass.

1926

Before reporting on our fifteenth reunion last June, let me present some of the current items of news. The marriage of Edith Ross Pardee of Hazleton, Pa., and Harwichport, Mass., to Francis Reid van Buren of Cincinnati took place at high noon on Saturday, June 14. After a summer cruise the van Burens returned to Cincinnati, where Van is administrator of the Children's Hospital. — Shih M. Chu of the Chinese embassy in Washington has written a letter expressing his regrets that he was unable to attend the reunion. Chu is a major general in the Chinese Army and is a military attaché to the Chinese embassy. — Horace Bush has moved from Boston to Greensboro, N.C., where he is now factory representative of the E. H. Jacobs Manufacturing Company, which manufactures loom parts. Mac's territory is North Carolina and Virginia.

Stark Draper, who is a professor in the Institute's Department of Aeronautical Engineering and in charge of its instruments laboratory, underwent a successful operation this summer and is now back in harness. — Bud Wilbur spent most of the summer occupied by his duties as chief engineer on the big Smith-Putnam wind turbine which has been constructed on the top of Grandpa's Knob in Vermont. Though Bud strenuously objects to this interesting installation's being called a windmill, that is what it is to most mortals, even though it incorporates all manner of new ideas and unusual structural and aerodynamic features. The aim of this experiment is to provide a wind turbine on a sufficiently large scale to demonstrate the feasibility of using wind for the generation of secondary electric power. From all reports the venture is working out successfully.

Strictly speaking, Benny Billman is not a member of our Class, since he received his degree prior to 1926. Nevertheless, the Secretary reports his visit this summer to Boston, where he drove from his home in Dallas, Texas. Benny is assistant treasurer of the Trinity Portland Cement Company.

In a note reporting on his inability to get to the reunion, Bean Lambert generously came to the aid of the Secretary by submitting several news items. He reports that Ned Lane was married in Philadelphia last fall to the attractive Mary Perkins. Sid Brookes, who attended the reunion, seemed to be happy and healthy. He is an authority on electric power with the Public Service Electric and Gas Company of New Jersey. Ted Faithfull has been very successful at patent law in New York, and he and Mrs. Faithfull now have two small girls. Henry Hoar '25 is busy covering Washington defense work for United States Steel's National Tube Company and has a man-child aged three. Hank and Bean are married to first cousins from Richmond, and they live near each other outside of Baltimore. Bean is with the Fidelity Trust Company in Baltimore. — On September 9 a son, Stephen Denny, was born to Mr. and Mrs. Richard Whiting of Washington Street, Wellesley Hills. Dick distinguished himself as chairman of Alumni Day this last June and is a successful patent lawyer with the firm of Fish, Richardson and Neave in Boston.

George Smith, the chairman of our fifteenth reunion committee, has brought to the Secretary a batch of Kodachrome slides in which he managed to record for posterity a series of portraits of a substantial portion of the eighty-five men who were present at the doings at Boxwood Manor in Old Lyme, Conn. These colored pictures describe more eloquently than words the degree of preservation, the obvious hardiness, the state of sobriety, and the general exuberance of those who attended the reunion. These slides will be supplemented by a colored movie, likewise made at the reunion, and held for the future edification of the Class.

Chief among the prizes awarded at the reunion was that for the member coming the longest distance, and Bill Rivers from Calcutta, India, won it hands down. Bill was able to get home on a furlough and has spent the summer in the East, having only recently flown back to India where he works with the Standard-Vacuum Oil Company. Another man on furlough from foreign service who was at the reunion is Freddy Walch, who, as representative of Dewey and Almy Chemical Company, was in France during the invasion. He stayed abroad to continue his business activities even through the occupation of areas such as Holland.

Others came from long distances within the United States. Jim Drain came from Michigan City, Ind.; Walter H. Emerson from East Liverpool, Ohio; Ray Mancha from Columbus, Ohio; and Mooney Owen from Washington. If the reunion had done nothing else but bring together our two midget banjo-players — Dave Shepard and Ray Mancha — it would have been a success. Apparently having lost none of their technique, but having actually gained in syncopated abandon, they provided some of the high spots of the reunion with their playing. As I listened to them I was reminded of the man who applied for a job in the midget side show of the circus. He was six feet, eight inches tall, and when the employer asked him how he expected to perform as a midget, the man replied that he should be a sensation as the largest midget in the world.

The Secretary wishes that this estimable magazine could provide sufficient room to describe in full detail all that transpired at this festival, but let us within the restrictions of space, the laws of libel, and the conventions, quickly assure those who were not there that they should have been — not only because they would have had a good time but because they should have been re-assured of the power of the Class to make its way and of the high level of achievement that has been reached in the fifteen years since we last trod the gravel of the Great Court.

The Secretary would record here, too, the appreciation of the Class to the committee that ran the reunion with gusto and efficiency and spent many long hours in planning and arranging it. Working with Chairman George Smith were Herb

1926 Continued

Beckwith, Mac Bush, Don Cunningham, Wes Hemeon, Joe Levis, Cedric Valentine, Bill Lowell, Bill Meehan, Pink Salmon, Flint Taylor, and Bud Wilbur. — JAMES R. KILLIAN, JR., *General Secretary*, Room 3-208, M.I.T., Cambridge, Mass.

1927

Here we are back to the avocation of writing class notes after months of nothing but business assignments and keeping the wolf from the door. With the hope and expectancy that the New Deal will sometime in the years ahead be glad to subsidize class secretaries, your Secretary continues to build seniority.

In a recent conversation with Lew Baker, I reported the engagement of Erik Hofman, now a lieutenant, and Katherine Tibby O'Reilly of New York City. The news came to me from a newspaper clipping. Up-to-the-minute Lew then brought me up to date with the news that the wedding had already taken place and that Erik may be a lieutenant commander by now at the Bureau of Aeronautics in Washington. As for Lew, he spent that part of the summer not taken up by trips to Washington and sections of the hinterland, in Southport and sailing on Long Island Sound.

The questionnaire of a year ago brought surprisingly good results, though a dozen or so of our classmates have not yet responded. Births, marriages, changes of location, and so on, will be quickly reported on notification.

Charles Armstrong, VI, a supervising insurance engineer in Omaha, is married and has three sons — sixteen, fourteen, and twelve years old, respectively. — Walt Johnson wrote from Norris, Tenn., where he is assistant hydraulic engineer with the Tennessee Valley Authority. He says that Jim Flagg is also with the T.V.A., in the design department at Knoxville. Jim was married over a year ago. — Al Gifford is reported as having left the T.V.A. for a teaching assignment in the Department of Civil and Sanitary Engineering at the Institute.

Eddie Norris is living in Barberton, Ohio, where he is factory manager for the Sun Rubber Company. He married Harriet Joan Winter in August, 1937, and my year-old report says there are two sons now three and two years old.

It was a shock to learn of the death on August 6 of Howard Lary, who was stricken with a sudden heart ailment. Lary's unusual success in the Denver area, first as regional mining engineer for the Reconstruction Finance Corporation and later as regional administrator for the Securities and Exchange Commission, has been reported in these columns at various times. Our sincere sympathy is expressed to Mrs. Lary and to Howard's parents, Mr. and Mrs. Stanley Lary.

A by-line story from the Miami daily *News* dated March 31 names Oscar Cox as drafter of the Lease-Lend Bill. Cox is an attorney as well as an engineer and is a member of the general counsel staff of the United States Treasury Department.

While we are on the subject of government service, we note the following classmates who are on active duty: Lieutenant George R. Taminosian, Tallahassee Air Base, Tallahassee, Fla.; Lieutenant Paul Parker, Canton, Ohio; Captain Charles Smith, Chevy Chase, Md.; Captain Joseph McCarthy, Phoenix, Ariz.; Captain William R. Frederick, Jr., Columbia, S.C.; Major Frederic Glantzberg, American Embassy, Bogotá, Colombia, S.A. — No doubt there are many others. These were taken from the address-change notices sent by the Register of Former Students.

Engagements and marriages have been featured in these columns for many years, yet the notices and clippings of new ones continue to come with startling regularity. The engagement of Emilie Prien of Oldwich, N.J., to Henry Barlow was announced in the August 3 New York *Herald Tribune*. — On August 23, Alice Mary Drugan of Wakefield, Mass., and Charles Dinan were married. — The engagement of Ernestine Hills of Brookline, Mass., and Richard Pratt Hawkins of Boston was announced in mid-July, and the wedding was to take place in the autumn. — The Harry Franks' have announced the arrival of Joan Susan on May 10.

Jim Lyles phoned recently to inquire if we expect to have class notes this year. He continued in his usual tactful way to tell me that, though I might not realize it, I'm getting older, and that our fifteen-year reunion is coming up this spring. He said I should tell all to make plans now to attend, and that he has the organization of a reunion committee under way. In other words, start thinking about the reunion *now*. Incidentally, Jim's conversation was directed away from any reference to our golf game on Labor Day, which ended in his embarrassing defeat.

No doubt the New York crowd will get together again this fall under the sponsorship of Bob Bonnar. Bob hasn't introduced the subject yet, but my guess is that a meeting will be held in late November or early December. Visiting firemen should contact Bob at Walker 5-0320.

Please note the change in your Secretary's address. A call to the New York office — Eldorado 5-3148 — however, will still be sufficient for messages, and you might very well find him at the other end of the wire.

And, finally, have you contributed to this year's Alumni Fund? Contributions are needed now more than ever. Give as much as you can afford, and if you've already given but can spare more, send in a supplementary check. Fund contributions are deductible from your income tax and are 100 per cent producing investments. — RAYMOND F. HIBBERT, *General Secretary*, Boots Aircraft Nut Corporation, New Canaan, Conn. DWIGHT C. ARNOLD, *Assistant Secretary*, Arnold-Copeland Company, Inc., 222 Summer Street, Boston, Mass.

1928

Thirty-two per cent of our class quota for the Alumni Fund had been subscribed as of August 15. That's our record as we go to press. It isn't an outstanding record for '28 to hand out in competition with other classes, for it's just a bit below the average of all classes.

Do we want to be below average? No. Let's go. — Dig those Fund blanks out of your wife's recipe file and send them in. Technology is doing really valuable defense work these days, and our support is needed — and not just moral support.

Did you know: That John Leslie is now manager of the Atlantic division of the Pan American Airways System, with administrative supervision over the International Air Line's Lisbon to New York clippers? That Waldo Keyes is a sales engineer with the Kimberly-Clark Corporation, promoting the sale of packing and insulation materials to the United States Government? That Earl Crawford and George Palo work in Knoxville, Tenn.? Earl is with the Southern Railway and George is with the Tennessee Valley Authority. George recently broke his ankle and has had to resort to crutches for a while.

News arrived by way of Bob Peatfield that his gang down New York way are all big family men. Peat is working for Consolidated Edison Company and has two boys, aged six and three. Bill Murphy and Freddie O'Brien are also with Consolidated. Bill has three children, and Freddie has two.

From Johnny Melcher, our Class Agent for the Alumni Fund, I received a swell, newsy letter which you all will want to read: "Mrs. Melcher and I had dinner in Montreal with Howard and Mrs. Root. Howdy, as you know, abandoned engineering for medicine a few years ago. He is now a pathologist in the western division of the Montreal General Hospital, offering a high quality of autopsy and postmortem services to any of his friends needing same while in the vicinity. Mrs. Root is also a doctor, though not practicing now. They met at McGill and were married about a year ago. We had a very pleasant evening with them, with dinner at a French restaurant where there are tables in the treetops, and we had a first-class bull session.

"Ames Hettrick wrote that he is still doing business at the old stand, Virginia Chemical Corporation, Piney River, Va., where he has been for ten years and is currently vice-president. He reported enthusiasm for the Alumni Fund on its present annual contribution basis, and hoped that his good example in the matter of a check will be followed by the rest of us.

"Charlie Newhall wrote from Chicago about his work with Public Service Company of Northern Illinois. He is co-inventor of the Morse-Newhall test set for fault location in power cables and has spent much of his time for the past several years in the development and use of the outfit, simultaneously improving the continuity of electric service for his company. The outfit is similar in measuring principle to the fault location bridges we were all supposed to learn about in lab, but Charlie's outfit is designed to find the weak spots and break them down slightly in tests while the cables are out

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of service, then locate the small faults and repair them before the cables are put back in service. Several of the outfits are in use by various power companies, and it is hoped that Charlie's invention will become a standard test method in the maintenance of power cables. As is characteristic of inventors, he sends us lots of dope about his work — but none about Charlie.

"Fritz Rutherford wrote from Detroit that he has joined Uncle Sam's forces in the procurement division of the ordnance department of the Army, with the rank of captain. He is working in the Detroit area, co-operating with various plants having defense contracts, in their efforts to speed up production. His civilian job was chief engineer of the Detroit Brass and Malleable Works. His experience in cracking production bottlenecks will be put to good use.

"The Alumni Fund campaign has been going rather well for our Class. We still have a long way to go to meet our quota, but the response has been comparable to that of other classes. Some of our life members (there are twenty-three in our Class) have not fully understood the precautions taken to protect their interests in the Alumni Association and the Alumni Fund, so that an additional word on the subject is not amiss. The life subscriptions have been set up as an annuity for the Alumni Association, to pay the cost of a member's Review subscription and minor Alumni Association expenses as long as the life subscriber lives. He is thus automatically credited with an Alumni Fund contribution of this amount every year. Any additional annual contribution he may make is used entirely for Institute, and not Alumni Association, purposes, and he may designate the exact use to be made of the money.

"Bill Slagle is doing his tour of duty for Uncle Sam as captain in the Chemical Warfare Service, assigned to administrative work in the chemical warfare development laboratories at Technology."

Chuck Carter is involved in statistical work with the Bell Telephone Company of Canada. He is particularly interested in personnel and mathematical statistics and would like to hear from anyone doing similar work. Chuck is married, has a little girl, and lives at Pointe Claire, Quebec, about fifteen miles from Montreal. Chuck notes that taxes are going up but remarks that "we haven't seen nothing yet. But no one here seems to worry very much about them; they just pay and carry on."

On June 28 Nathan Norcross and Jean Dessart Wigman were married in Toledo, Ohio. From M.I.T., Doc successively attended Harvard, Boston University, and McGill University. He was neurological surgeon at the Toledo clinic, but he and his wife have now gone to Mare Island, Calif., where Dr. Norcross was called by the Navy. He is a lieutenant in the Naval Reserve.

Another naval reservist, Jack Chamberlain, now has a lieutenant's commission and is stationed aboard the cruiser *Memphis*. Previous to that, Jack was at the Naval Reserve aviation base at Squantum. Before he was called by the Navy last December, he was assistant to the medical director at M.I.T., a member of the surgical staffs of the Cambridge and Massachusetts general hospitals, and an instructor of surgery at the Boston University medical school. Jack also reports that Fred Riley is a member of the Naval Reserve, and that Frank McGuane has a new daughter. His first-born was a boy. Frank has been active in the Chemical Warfare Service, Ordnance Reserve Corps, and may also be on active duty now. Bob Harris is working with the government on nutritional research and makes frequent trips to Washington.

Oddities in our news: From the International Press-Cutting Bureau, Fleet Street, London, comes a clipping from a foreign newspaper, the *Natal Witness*. The clipping concerns the family of Vittorio S. Fago. The story is so interesting and unusual that I am quoting most of it: "Among the 1,500 women in Harar, whose fears of a native rising were set at rest by the entry of the British troops, there was not one Englishwoman but there was one solitary American. She is Mrs. Elizabeth Burger Fago, the wife of a senior Italian civil servant who is in charge of the waterworks throughout Abyssinia.

"Mrs. Fago met her husband when he was studying engineering at the Massachusetts Institute of Technology in Boston. . . . She is the daughter of Dr. Thomas Overton Burger, a prominent surgeon of San Diego, California. Mrs. Fago has just given birth to a child, who is the first white baby born in Harar since the British occupation.

"One of her other three children was the first white child born in Harar after the Italian conquest in 1936. It's godfather was General Guigliemo Nasi, then one of Marshal Graziani's divisional commanders, whose own troops took Harar and who is now Chief of the General Staff of the Italian Army in East Africa.

"When the Fagos arrived nearly five years ago, there were no other civilians in Harar. . . . They lived in a mud hut until they completed the building of the first private house in the town. Owing to the prevailing conditions it was two years before the windows of the house were glazed, and for a long time they had to be content with mud floors until things settled down, imports began and they were able to lay linoleum over the mud.

"Mrs. Fago, like other women in Harar, was grateful to the S.A.A.F. and the artillery for refraining from bombarding the civilian population. When the troops walked in it was the end of two days severe strain for the women, who from the heights of Harar were able to see the progress of the battle in which their husbands were engaged." — GEORGE I. CHATFIELD, *General Secretary*, 6 Alben Street, Winchester, Mass.

1930

Two appeals inaugurate this issue of The Review. The first is for news, which we most sincerely need to make it possible for our Class to be represented each month in these columns. The second is for contributions to the Alumni Fund, which the Institute needs to further its excellent work. Phil Holt, X, is to be complimented for the big improvement in the '30 figures in the second year's totals to date. The many loyal and devoted members of the Class who have equalled or increased their last year's pledges are to be complimented, too, as are those who have contributed this year for the first time. If any others not thus included should wonder what is expected of them, Phil Holt, our Class Agent, of 24 Blackburn Road, Summit, N.J., will be very happy to explain. Contributions may be sent directly to the Alumni Association Office at the Institute.

Since we last went to press, two classmates have been married: Al Carideo, II, on May 25 to Eva Nicollotti of West Roxbury, and W. G. Thompson, VII, to Rowena Rhodes of Taunton, Mass., on August 9. — The engagement of George Walker, IX-B, to Elsa Boerum of Brightwaters, Long Island, was recently announced. — A second son was born on June 1 to Mr. and Mrs. Melchor Centeno, VI, in New York City. The March issue of the *Journal of the Optical Society of America* contained an article contributed by Centeno.

Herbert C. Roters, VI, has transferred his allegiance from Stevens Institute of Technology in Hoboken to Armour College in Chicago. — Cecil G. Dunn, VII, of our own Institute staff is now stationed in the Washington office of the quartermaster general, with the rank of captain. Jack Latham, II, is now affiliated with Arthur D. Little, Inc., in Cambridge. Jack continues with the Polaroid Corporation in an advisory capacity.

Bill Spahr, VI-A, a lieutenant, wrote from Camp Beauregard, La.: "I'm down here operating a signal depot. The weather's pretty hot, but this is not bad country." If there's a golf course anywhere within shooting distance, Bill's spare time will be spent there. Your Secretary still remembers his defeat at the hands of Lieutenant Bill at our ten-year reunion, in the first round of the match play. Another of our golfing brethren, Joe Rehler, I, is a lieutenant in the Army at Drexel Hill, Pa. Other classmates now in the service include Major Jack Thomas, XVI, at Camp Davis, N.C.; Lieutenant Les Ferrier, VI, at Camp Shelby, Miss.; and Lieutenant Joe Bohorfoush, XVII, at San Angelo, Texas. All of these fellows will appreciate hearing from their friends. — PARKER H. STARRATT, *General Secretary*, 1 Bradley Park Drive, Hingham, Mass.

1931

Those of you who were at the tenth reunion at Saybrook need no reminder of those grand two days. For those of you who were unfortunate enough not to be on hand, I will attempt to recapture in some small measure the spirit of the occasion and to give some of the highlights of the all-too-short week end.

1931 Continued

Some sort of a record must have been set for the variety of ways used in getting to and from the outing. Bob Sanders came from Washington in his plane and landed at the Essex airport. Art Newell came from Long Island in his speedboat and brought Randy Binner, Don Corson, and Frank Dame. The rest of us came by either train or auto. Gid Rice, who lives in the town next to Saybrook, could have walked over, which would have just about completed the cycle. Yes sir, '31 forges ahead "on land, on the sea, and in the air."

Those present were: Henry Ahlberg, Dick Ashenden, Carl Baker, Dick Baltzer, Randy Binner, Gene Branca, Dave Buchanan, Otto Burtner, Jack Carleton, Al Coleman, Don Corson, Wen Currier, Frank Dame, Ralph Davis, Art Demars, Martin Feeney, Norm FitzGerald, Ducky Graham, Ed Heffernan, George Hickey, John Higgins, Ed Hubbard, Leon Kolker, Jack Lane, Bert MacLeod, Syd Miller, Art Newell, Al Pierce, Dick Pollack, Gid Rice, Howie Richardson, Bob Sanders, Jack Smith, Ben Steverman, Bernie Stott, John Vincent, Dave Walters, Jim Wood, and Ed Worden. At the clambake on Sunday afternoon Mrs. Burtner, Mrs. Graham, and Mrs. Worden lent a feminine touch to the festivities.

After luncheon on Saturday, golf, tennis, softball, swimming, and beer kept everyone pretty busy. The banquet on Saturday night was very informal and the speeches were spontaneous eruptions in which practically everyone had a part. Dick Pollack must have had something to talk about, as he had the floor for about half an hour. Unfortunately, no one had the foresight to take down his speech, and so it is now just a pleasant memory of Dick's opening and closing his mouth amidst occasional flurries of confusion.

Card games, the barbershop chorus, and the bar all had their enthusiasts for the rest of the evening. On Sunday more tennis, golf, swimming, and boating in the morning and a clambake at the shore in the afternoon were the features. During the afternoon the party gradually broke up, with some of the boys going back to Cambridge for Alumni Day on Monday.

From Lou Morse we received a wire in which he expressed his regrets at his inability to be with us for the reunion. He extended his best wishes to all present. Lou is now living in Bloomfield Hills, Mich., and must have found the distance a little too great. We had many regrets from others who deplored their bad luck at being so far away. Bun Stott didn't let the distance hold him back, and he was our star traveler, coming all the way from Chicago.

At the '31 table at the Alumni Day banquet were Buchanan, Burtner, Higgins, Pierce, and Richardson from the reunion, and, in addition, Otto Kohler, Claude Machen, and Henri Turner.

Information relative to members of the Class has piled up over the summer months, and I shall save some of it for the next issue of The Review. I have found that we have either a feast or a famine as far as news for this column is concerned.

Ralph Jope '28 received a letter dated July 27 from John L. Reid of 208 Glenn Avenue, Fresno, Calif. Excerpts from the letter read as follows: "My contacts with M.I.T. are limited to the letters I receive from Cambridge. Although I receive notices from the Technology Club in San Francisco, I haven't been able as yet to get up there for a meeting. There are several Technology graduates in this town, but our paths do not cross as often as we should like to have them. I notice that we all have one thing in common, and that is an eagerness for news of the Institute. When you have once been a student at M.I.T., something evidently gets into your blood that becomes a permanent part of your make-up.

"The work I am doing here has been very absorbing, and I feel that I am profiting greatly by the experience. As you know, my work has been largely the design of school buildings: elementary, high school, and some junior colleges. School plants in California are considered centers of community activity the year round, in addition to being used for the purely academic classroom work of the winter. We are also designing schools for districts whose population consists largely of migrant farm workers in the locality made famous, or infamous, by the *Grapes of Wrath*. In that district, because of the character of the parents, their poverty, and the nature of their work, the schools are taking more and more responsibility toward the children. In some cases the kids are under the charge of the school from the time they get out of bed in the morning until almost bedtime at night. All these new requirements bring up totally new problems in planning and building, and so you can see that my work has been interesting.

"I am afraid that the defense program will slow down our practice to a great degree. We have already felt the effects of it. It is hard to get certain types of building materials and certain kinds of labor."

The marriage of Mildred Hubbs to John MacBrayne was announced last spring. The wedding took place at Gates Mills, Ohio. — Emma Regina Madsen became the bride of L. Whitman Johnston in June at Perth Amboy, N.J. — Irene Mildred Eisenman was married to David William Bernstein in Boston early this year. — The *VI-A News* sends us word of the marriage of Bernice Champeny Squire and Henry D. Randall, Jr., in Richmond, Va. — Elizabeth Randolph Turner was married to Daniel T. Cox at Montrose, The Plains, Va., on August 28. — Announcement has also been received from Montclair, N.J., of the engagement of Elizabeth W. Hubbard to Robert T. Leadbetter.

Mr. and Mrs. Jeter Marvin Watson, Jr., have announced the birth of a son, Jeter Marvin Watson, 3d, on April 28. Watson will be remembered as one of the two cowboys, Watson and Weaver, who stayed with Karl L. Wildes '22, Associate Professor of Electrical Engineering, while they were at the Institute. Both fellows came from Virginia and are now back in their home country. Weaver is in Washington, D.C., and Mr. and Mrs. Watson are living outside of Richmond, Va.

Captain and Mrs. Harry Donald Kamy have announced the birth of a son, Stuart Alan, on July 15. The Kamy family are living at 114 North Washington Street, Alexandria, Va. — Mr. and Mrs. Ben W. Steverman announce the birth of their first child, a daughter, Faith, on July 4.

The Alumni Office has inquired about the whereabouts of Felix S. Casipit, Eldon L. Shorey, Asa O. Walker, and Wichian Vibul. Can anyone supply their addresses? — BENJAMIN W. STEVERMAN, *General Secretary*, 14 Russell Street, Atlantic, Mass.

1932

In June comes our tenth reunion, and during this year all of us must plan and organize a real celebration of this important milestone in our Alumni life. Your ideas now and your presence in June are essential to the success of our reunion.

As you read these notes try to forget our endless pre-occupation with means, and think of ends. We who share a common educational experience are members of a real community. Why not be active members? At a time when so many things are disrupted, should we not strengthen our ties to the firm reality of Technology?

Winston Braxton was back in New York last summer from Singapore. On June 27 he was married to Marjorie Hill. We understand that he was not able to take his bride back with him as he originally planned. — Another June wedding was that of Parker Devlin to Dorothea Crowshaw in Providence. The Devlins are at home on 22 Waverley Avenue, Newton, Mass. — George Green was married on May 10 to Phyllys Germain, a graduate of Boston University, school of practical arts and letters.

Arthur Jewell has been appointed principal of the George Washington Carver vocational school in Wilmington, Del. He has been on the faculty of Shaw University, Raleigh, N.C., since 1936. After receiving a master of science degree at Technology, he continued his studies in education at Harvard University and at the University of Chicago.

If any of you have not sent in that check to the Alumni Fund, there's no time like the present. The same truism applies to that news you have been intending to send me. — CLARENCE M. CHASE, JR., *General Secretary*, 1207 West 7th Street, Plainfield, N.J. CARROLL L. WILSON, *Assistant Secretary*, Research Corporation, 137 Newbury Street, Boston, Mass.

1934

It is hard to realize that only a few years ago we were wandering apologetically around the Coop, buying long lists of books and red and gray striped ties. But enough of the temporal philosophiz-

1934 Continued

ing. If I'm not careful I'll get my long gray beard caught in the typewriter.

An excerpt of a letter, dated August 16, from Francis S. Doyle reads: "I'm now located at Buffalo, with the Curtiss-Wright Company in their engineering department, where I am happy to be associated with a great many M.I.T. men — several of whom attended our alma mater when I did, and some of whom are '34 men. Naturally, we are greatly interested in Technology affairs and often discuss them."

Nicholas G. Dumbros, who was formerly with the Federal Petroleum Agency at Kilgore, Texas, has been called to Washington as petroleum expert for the administrator of export control. His new address is 3111 North 21st Street, Arlington, Va. It takes Tech men to keep this emergency program running smoothly.

A note from Ewald Andresen arrived last summer just after the last issue of The Review had gone to press. The news that it contains, however, will be fresh to most of you: "My wife has been after me ever since our baby was born on April 16 to get this announcement in our class notes. It's a girl — Annette Claire — weighing seven pounds, eight and one-half ounces at birth, and born at the Bridgeport Hospital.

"I am still with the Turner Construction Company, New York City, as I have been since the fall of 1937. I am at present assistant superintendent in charge of line and grades on assembly building for the Bullard Company, the largest machine tool company in the East, located here in Bridgeport. The building is a national defense project, ordered and financed by the government, and our third contract with the Bullard Company since May, 1940."

During the summer months several engagements were announced. Walt Wrigley is engaged to Dorothy Brown, daughter of Mr. and Mrs. William W. Brown of Wollaston, Mass. The wedding was planned for this fall. — Wilbur Paulsen has sworn allegience to Muriel Fellows Kelley, daughter of Mr. and Mrs. E. Atwood Kelley of Auburndale, Mass. — Bennett Fisher has chosen his bride-to-be in Elsie Lawson, daughter of Dr. and Mrs. J. Herbert Lawson of New York.

Announcement was made in June of the engagement of George Bull — or rather Lieutenant George Bull — to Mary Elizabeth Thatcher, daughter of Dr. and Mrs. Charles J. Thatcher of New York. The wedding was planned for early summer, so by this time they should be well launched on the sea of connubial bliss. The couple will be located at Fortress Monroe, Va.

Several other members of the Class have joined the ranks of the benedicts. Bert Heintz, whose engagement was announced in the June issue of The Review, was married in May to Marion Hinton of San Francisco. — Carl Wilson said his eyedooz with Muriel Raphaelson, daughter of Mr. and Mrs. Saul Raphaelson of Worcester. The marriage took place on Sunday, August 17. — Charlie Feuchter walked alterward on July 3 at Galveston, Texas. The lucky lady was Emma Johnson of Galveston.

Well, fellows, we send you our heartiest congratulations and wish you all the luck in the world. — JOHN G. CALLAN, JR., *General Secretary*, 184 Ames Street, Sharon, Mass. ROBERT G. BECKER, *Assistant Secretary*, Chile Copper Company, Chuquicamata, Chile, S.A.

1935

Hal Bemis, as Class Agent, has been doing a mighty fine job, and as a result the standing of the Class is quite respectable in the Alumni Fund drive. In terms of money contributed, the Class has the best per cent of quota of any class from 1916 to 1941. However, our per cent of quota in terms of number of contributors does not look so good in comparison with recent classes. You are the fellows who can help out on this latter situation. What we need is a larger number of contributors, so whenever you meet a classmate remind him of the Alumni Fund. Of course, if you yourself have not yet contributed, that is the item of first consideration. Let's all pull together to make '35 a Class to be remembered in other respects than the senior banquet.

Here is the usual crop of marital notes. Bill Klehm was married to the former Ruth McCabe of Ashmont, Mass., on May 26. Bill is working on concrete design for Stone and Webster Engineering Corporation in Boston. Zay Curtis married Elizabeth Davis of Pelham, N.Y., on June 27, the twenty-seventh wedding anniversary of the bride's parents. Zay is working for Brewster Aeronautical Corporation in Long Island City. George Valley stepped off the deep end with Louisa Williams on July 19. George received his Ph.D. in physics from the University of Rochester in 1939. He is now a national research fellow in physics at Harvard University. Dick Corbett committed merger with Irene Cawley of Ambler, Pa. After Dick left M.I.T., he attended the State College of Optometry in Philadelphia, Pa., and is now a practicing optometrist in Boston, Mass. Dick Rice took as his bride Marjorie Bentley of Wollaston, Mass., on May 17. Dick is production manager on natural color printing for Comstock and Wescott, Inc. Cohen marries Cohen — Paul and Pauline, respectively, on July 6. Paul is an engineer for United Shoe Machinery Corporation. John Rutledge and Wilna Valentine were married on May 31. John Seaver was married to Millicent Leeds of Brookline on September 6. He is a metallurgist on development at the West Lynn works of the General Electric Company. Leo Beckwith is engaged to Betty Albert of Brookline. Leo is assistant to the general manager of the Market Forge Company, producing material-handling equipment. Art King and Nancy Reager of Louisville, Ky., are to be married this fall. Art is assistant treasurer of the Mengel Company in Louisville. Paul Germond and Eleanor Martin of Jersey City are engaged. Paul is design engineer and sales secretary of the Revolvator Company.

I received quite a lengthy letter from Jeff Farmer concerning his work in the Army. He also mentioned that Frank Berman is in the Army and is assigned to the Anniston Ordnance Depot in Anniston, Ala. Jeff was ordered to duty with the constructing quartermaster, which is a division of the Quartermaster Corps. This department was set up to control expenditures and to see that the money is spent wisely. The particular job to which Jeff is assigned is the Louisiana Ordnance Plant, which is intended for shell loading. It is located between Mendin and Shreveport in the northwest corner of the state. Jeff arrived on the job on August 21, shortly after the job was started. He reports that people are pouring in from all over the country in trailers, trucks, jalopies, and on foot. The actual work on the job — design, engineering, and construction — is being done by the Silas Mason Company, who built the Grand Coulee Dam, Sumner Tunnel, and the Empire State Building.

Jeff's assignment includes a number of duties among which is that of fire marshal. Under him is a fire chief and a complete fire department of about forty-eight men and four trucks. Jeff is also reports officer, and his work involves the responsibility of seeing that reports are accurate, on time, and in proper form. Another of Jeff's duties is that of heavy-equipment officer. This job involves the approval of all drawings submitted for mechanical equipment, piping, and production equipment, including such items as locomotives, trains, tractors, trucks, graders, dozers, and so on. Jeff's final duty is that of review officer. This duty involves the inspection and condemnation of property which the government wishes to sell or scrap. Jeff has made a couple of flights over the site and reports that the country really is beautiful. He mentioned that just before he left New England, some of the gang had quite a party at Norm Bull's place in Hampstead, N.H. Norm Bull, George Struck '34, and Bernie Nelson were there with their wives. The party wound up when Nelson led the group in a snake dance into the lake.

The following are news items picked up from various sources. Carl Floe is an assistant professor at Technology. Rodney King is working for American Airlines, Inc., at LaGuardia Field. Sam Orton has left the Linton Brothers and Company and is now with Union Machine Company in Fitchburg, Mass. Adam Altglass has been called to active duty by the Army. Will Crout has been graduated from Harvard law school and is now working for Westinghouse Electric and Manufacturing Company in East Pittsburgh. John Demo is now a lieutenant at the Jefferson Proving Ground, Madison, Ind. John formerly was with the Tide Water Associated Oil Company.

Ambrose Higgins is now a captain in the Army Air Corps at Westover Field, Chicopee Falls, Mass. Jack Holley has left the Oakville Pin Company to go on active duty at Fort Terry, N.Y. Phil Johnston has left American Machine and

1935 Continued

Metals, Inc., for active duty in Augusta, Ga. The Signal Corps has transferred Tom Blair to Puerto Rico. John Whitney is working for the Kimberly-Clark Corporation in Niagara Falls, N.Y. Lester Brooks has completed his studies at the University of Illinois and is now with the Sprague Specialties Company in North Adams, Mass. Procter and Gamble has transferred Bill Douglass to the Procter and Gamble Defense Corporation in Milan, Tenn. Bis Alderman is again teaching at the Institute, this time as assistant professor.

Dick Bailey is now on active duty in Holly Ridge, N.C. He had been working as a junior accountant for Dent K. Burk Association. John Best is now working on production control for the Bendix Radio Corporation. John Tebbetts has been called from Travelers Insurance Company by the Coast Artillery and is now at Fort Terry, N.Y. Dex Clough has received his M.D. from the University of Pennsylvania and is now at the Memphis Eye, Ear, Nose and Throat Hospital. Bob Hill has been drafted from his job at the Molybdenum Mining Corporation. Tom Keeling is on active duty in Washington, D.C., having left the Electro Bleaching Gas Company. Darrell Root is on active duty at Fort Dix, N.J. He was with the Permutit Company.

Lars Sjodahl is on active duty at Fort Wayne, Ind., which is an air base. His job is that of ordnance property officer. He was with the Dayton Rubber Manufacturing Company. Hal Bemis, our Class Agent, has left the Campbell Soup Company for active duty in Wilmington, Del. Lloyd Clark has left the Snider Packing Corporation for active duty in Camp Stewart, Ga. Ed Edgar is on active duty at Fort Bragg, N.C. Formerly he was an analyst in the general manager's office of the Pittsburgh Railways Company. Leo Epstein has received his Ph.D. from the Institute and is now working for the United States Bureau of Mines. Bill Fraser has been promoted to a captaincy and is now at West Point. Don Gutleben has been called from the Spreckels Sugar Company to active duty in San Francisco. Before leaving the sugar company Don was a member of the winning golf team in the company's annual tournament. He also published in the company news bulletin an interesting account of a trip through a number of sugar houses, a soybean mill, and a sugar machinery company.

Bill Poison, who was with us in our first year, has been drafted. Herb Thomas is on active duty at the Army air base in Charlotte, N.C. He had been an engineer on the development of new meters at the Lynn works of the General Electric Company. John Thorpe has left the long lines department of the American Telephone and Telegraph Company for active duty at the Air Corps Gunnery School in Panama City, Fla.

That seems to be the end of the news for this month. What we need are more letters like Jeff Farmer's. Thanks, Jeff. Some of you fellows in the Army probably have had some experiences that would be of interest to all of us, so why not let us hear from you? — ROBERT J. GRANBERG, *General Secretary*, care of W. C. Voss, 9 Old Town Road, Wellesley Farms, Mass. RICHARD LAWRENCE, *Assistant Secretary*, 111 Waban Hill Road, North, Chestnut Hill, Mass.

1936

In spite of the Army and national defense, fifty members of our Class gathered at the Cliff Hotel in Scituate to celebrate our first five years out of the Institute. Of course, all fifty weren't there for the entire festivities, but those of us who were present for the whole week end got a chance to see and talk with everyone. The Army even let our President, Jack Austin, off from his duties with the coastal defense planners to attend the reunion. Art Carota, Hank Johnson, and Roman Ulans are also in the Army and managed to get enough time off to meet with us. Defense industries did their part by allowing some of their men to be with us, too. From the Glenn L. Martin Company in Baltimore, Md., came Web Francis, Harold Miller, and Phil Norton; from the M. W. Kellogg Company in New York came Dick DeWolfe; from the Jones and Lamson Machine Company in Springfield, Vt., came Bob Gillette; and from National Fireworks, Inc., came Leo Kramer. But before I go on with a complete enumeration of all present, I'd like to tell the highlights of the program as I remember them.

The festivities had really commenced at lunchtime on Saturday when George Hain got in the way of a container that was trying to find the shortest route from the ample supply provided by the committee to the lips of a thirsty reunioner. Thereafter, George bore a scar on his head to mark where he had been hit by the missile. After the ample supply of liquid refreshment had been exhausted, we proceeded to the beach, where a lively game of softball and a swim worked up an appetite for dinner. Some of the more athletically inclined classmates, on whom the years did not weigh so heavily, also tried golf and tennis. It was a happy-go-lucky crowd that sat down at the banquet table that evening. We had renewed our former friendships, and many of us had made friends with some of the group whom we really hadn't known before. The fish chowder and steaks disappeared rapidly, and the time soon came for the inevitable after-dinner speeches. The barrage of rolls was so intense, however, that no speaker was willing to stand up before the fire, so we were able to adjourn to the more important business of the evening all the sooner.

Hank Cargen did manage to announce the winners of certain prizes which were being offered to outstanding members of the group at the reunion, and I repeat the list for the benefit of those who did not catch the names at that time: The man who had had the most jobs since commencement was Ed Boyan, who has had seven and has finally reached the ultimate as a member of the staff at M.I.T. The longest married was Norm Bull, who took a wife in 1935, but he had to relinquish the prize for the greatest total age of children to Joel Bulkley, whose two youngsters have a combined age of six and one-half years. Norm's two have a total age of not quite five years. John P. Hamilton, coming from Niagara Falls, won a prize for the one who had come the longest distance to attend the reunion. But the most hotly contested prize of the evening was for the best storyteller. Many were the tales that were told, but one story topped all the others; that was the one told by Web Francis. Ask him to tell it to you sometime! One of the most interesting prizes was for the fellow who had digressed the furthest from engineering. There was no dispute about this one; it was won by Clax Monro, who is studying for the Presbyterian ministry.

The reunion continued through the evening, as you can all imagine, and then, finally, just when peace was beginning to descend on the Cliff Hotel, everyone was aroused to help Jack Austin find the battery for his car. This was finally located in a near-by thicket, and all was quiet until breakfast the next morning. More sports occupied the morning, and then after lunch we went our several ways again. Need I say that we all had a good time? Besides those mentioned, the following were seen at the reunion: Herb Borden, Dick Bryant, Doug Cairns, Arnold Clarke, Ben Cooperstein, Bob Edwards, Bill Garth, Martin Gilman, Ed Halfmann, Dick Halloran, Buckey Hannam, Tony Hittl, Frank Lessard, Henry Lippitt, Aaron Loomis, Brent Lowe, Carl Olson, John Pappas, Carl Peterson, Larry Peterson, Wil Post, Bob Sawyer, Bill Saylor, Dorian Shainin, Larry Sharpe, Bill Shea, Bob Sherman, Gordon Thomas, Don Thompson, Fletch Thornton, and Angie Tremaglio. I'd like to tell you about each of those at the reunion, but I'll just say that you should have been there. It was a swell affair, and our congratulations go to the committee who put it over.

Recent additions to the Army include Fred Assmann, Ken Blaisdell, Ford Boulware, Fred Carten, Leonard Cohen, Fred Davisson, Vincent Dobert, Dan Farmer, Jim Leary, Al Musschoot, Walter Sylvester, Norm White, Peter White, and Bob Williams. — I saw Bob last summer when he was in Buffalo trying to locate some officers for his signal corps.

Vincent Dobert wrote me some time ago to tell me that in 1937 he shortened his name from Dobrochowski. He also told of his work since graduation. For the first six months he worked for the General Railway Signal Company in Rochester, but left that to look over the country and landed a job with the Pennsylvania Railroad Company. He was first stationed in Fort Wayne, Ind., where his duty was to take care of the track and see that all passengers got a smooth, safe ride. He has since worked in the maintenance-of-way department in Dennison, Ohio; Blairsville, Pa., and Johnstown, Pa. Meanwhile, there was an interlude at Sandusky, Ohio, where Dobert took the former Frances Louise Otto

1936 Continued

as his wife, and in between courting managed to help build a coal-unloading pier. On April 27, 1940, a daughter, Polly Anna, was born to them, and now daddy is a lieutenant in the Army.

I received a letter some time ago from Gerry McMahon. He was married on April 14 to Catherine Marie Bodman of Ponca City, Okla., where Gerry is still working as technologist in the lubricating oil division of the Continental Oil Company. He says he's a real Oklahoman and likes both the work and the people very much. Other weddings which I believe have not yet been announced in these columns include that of Albert Klemka to the former Barbara Bachelder way back on November 26, 1940; of Dudley Mylchreest and Laura Chapman on May 31; of Edgar Ferris and Evelyn Pike on June 14; of John Chapper and Rosalie Blass; Marvine Gorham and Margaret W. Dunn; Hank Johnson and Virginia Dudley on April 26; Arthur Mayo and Ann Van Auken; Walt MacAdam and Rilla Mae Reed on January 13; Doug Mackiernan and Darrell Brown on July 20; Bob Woodcock and Frances Bennett on July 18; Joseph Burns and Mary Field; Charles Mueller and Virginia Phillips on June 8; Harrison Woodman and Elizabeth Campbell on June 8; and Dick Morton and Frances Alcorn on May 10.

Quite a list of engagements have been announced since our last class notes column went to press. They include those of Ronald Beckman and Barbara Allen, Charlie Miller and Janet Lee Boyle, Ed Rowe and Lelia Munce, Ed Summersgill and Jean Ferris, and Ernest Murray and Margaret Wilson.

News of new positions for several members of the Class has filtered down to the Secretary. Bill Bode is with Warren Brothers Roads Company in Cambridge. Dan Pearson is in Rio de Janeiro, Brazil, working for Pan-American Airways. Bill Nonneman is in Montreal with the Aluminum Company of Canada. The motor-engine department of General Electric at the Lynn, Mass., works has claimed Paul Lebenbaum. Willie Mullen is in Burbank, Calif., with the Lockheed Aircraft Corporation. Harry Hubbell is at the United States Bureau of Standards in Washington. Bernie Gordon's work with the United States Engineers has now taken him to Piedmont, Mo. Ralph Van Sant is in Toledo, Ohio, with the Gulf Refining Company. George Cummings is in the petroleum refining laboratory at State College, Pa. And Ching T. Koo is with the Shanghai Power Company in China.

I am sorry that I must close this column with word of the death of another of our classmates. Joseph Smith was killed in an airplane accident on September 13. He leaves his wife, Mrs. Lois A. Smith. — ANTON E. HITTL, *General Secretary*, West River Road, Grand Island, N.Y. ROBERT E. SAWYER, *Assistant Secretary*, 35 Lawndale Street, Belmont, Mass.

1937

Summer is past and we are back in print and gathering strength for our fifth reunion. Remember, all this year we shall be laying the groundwork for those few days in Cambridge; days when, slapping each other on the back, we'll say to ourselves, "Why don't we get together more often?" Personally, I'm going to hunt out Phil Peters and Walt Blake and thank them for their swell jobs as Class Agents.

Several of the fellows have decided to take themselves wives to bring; others, I suppose, will continue to wear their sheep's clothing. I've heard of the marriages of: William B. Burnet to Patricia Singer in Pittsburgh on September 13; George Weppler to Cornelia Menard in Cohasset, Mass., on August 9; Cleon C. Dodge to Mary Louise Edwards at East Hampton, L.I., on August 1; Conover Fitch, Jr., to Priscilla Hall at Nahant, Mass., on July 19; Philip Jacobs to Lillian King in New Bedford, Mass., on July 19; Frank J. Barrett to Dorothy Hill of Melrose at Christ Church in Cambridge on June 21; Michael M. Clapp to Hazel Hill at Missoula, Mont., on June 19; Robert D. Williams to Christine Buchholz on June 14; and Fred Altman on April 12 in Washington, D.C. — to whom, my little birdie did not say, although I'll wager it's now Mrs. Altman.

Last spring I looked forward to a fine summer and an enjoyable vacation when I could see some of you fellows, and when we could have a good time for ourselves. Well, I had a fine summer but no vacation — yet. Perhaps I can get away in time to see you all next June. — WINTHROP A. JOHNS, *General Secretary*, Route 1, Belle Mead, N.J.

1938

Apologies to you all for missing the last couple of issues with this column — we've already been bawled out soundly by Fred Kolb. The poor fellow announced his engagement in May, and most of you are hearing about it only now. But Fred, that's nothing unusual. Anyway, the girl is Polly Pollack of Simmons and Wilmette, Ill. They had a grand announcement party in the Graduate House.

As excuse for our neglect of you readers, we might blame it on the new nursemaid functions which your correspondent has had to assume — the new addition came to the Morgan family in July. This prompts me to add that, whatever you may have heard to the contrary, the Cambridge half of this column is still washing only his own dishes.

On the other hand, many of the old gang have signed their lives away recently. Don Severance, who is holding down the job of assistant registrar at the Institute, among other things, was married in June. The bride was Phyllis Smith of Oberlin College and Wellesley Hills.

Art Alexander was married on August 16 to Helene Jane Oliver of Berlin, N.H. She is a graduate of the Katharine Gibbs School. They expect to live on Beacon Hill this winter. In Glen Ridge, N.J., Roy Hopgood was married on August 2 to Alice Duncan of that little town. And back from a wedding trip in Canada are Saverio Santoro and his wife. They were married in Watertown. Art Gould and his bride are now located in Springfield, Mass., where Art has a grand supervisory position at the armory.

The Boston *Post* of August 24 carried a very attractive picture of Mrs. Edward Martin. Ed was married in Denver to Estelle Tracy. He has been in the government dams design section in Denver, but is now on active duty at Fort Leonard Wood, Mo., where he is battalion adjutant.

On May 31, Al Wilson was married to Carol Doty of Wyoming, Pa. Carol formerly attended Wellesley College. Ira Lohman, Jim Gillis, and Dick Muther were there for the festivities, which were really perfect. Al and his wife are now living at 32 Bertwell Road, Lexington, Mass. Al is doing structural steel work in Cambridge.

We had a letter forwarded to us from Bill Gibson with a São Paulo, Brazil, dateline of June 15. Bill had just finished tutoring a boy for Technology entrance exams and was leaving for a skiing trip in the Andes. His plans after that were vague. Rio, Bill says, is a cross between Washington and Atlantic City, "but is twice as beautiful as any other inhabited spot in the world."

Giff Griffin, we hear, is in development work at the Aberdeen Proving Ground, Md. Fred Lamb has been ordered to active duty as flight instructor at one of the Navy's advanced training bases. Dave Wright, we hear, is stationed at the Brooklyn Navy Yard.

Wedding bells are about to ring, if they have not already done so, for Don Holloway and Al Clogston. Both received doctors' degrees in June, along with Jeanne Kitenplon Gladding and Jack Mahoney. Also, engagements have been announced for Albert Stone, Charles Harrington, Ross Teel, Bob Reed, and Bruce Leslie.

Leland Cagwin was married in May in California and is now stationed in Hawaii. Alvin Howell has recently been promoted to chairman of the department of electrical engineering at Tufts College.

Frank Atwater, who is a production engineer at Fafnir Ball Bearing Company, has collaborated in writing a book on manufacturing principles and practice which will soon appear with a McGraw-Hill cover.

Emmett Ryder, who has been leading one of the finest bands in the West, recently signed up with Remington Arms Company, Inc., when most of his orchestra was drafted. Emmett was in Cambridge for Alumni Day and is now at Remington's new Denver plant. His visit and his recent song hit, "Caterpillar Shuffle," remind us of the mass kidnapping of freshmen he engineered our sophomore year. — Cy Scalingi is in aeronautical work of some kind in the Chicago area.

Two of the boys were married on August 16: Henry Homeyer, X, at Westfield, Mass., to Elfrieda Lenat; and Art Rowley, X, at Utica, N.Y., to Barbara Jean DeWitt. During September, two more class-

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mates stepped off the deep end; Jay AuWerter, XVI, was married on September 1 at Ilion, N.Y., to Ida Armstrong; and, on September 6, Dick Bartels, X, married Genevieve Beckers in South Orange, N.J. Congratulations to all. We suspect that others of our number have also been married since our last notes came out. We'd like to know about them, too.

We received a notice that the Dave Beamans, II-A, became the proud parents of a daughter, Anne Windsor, on July 31. — It is also indeed a pleasure to announce that some news of your Class Secretary has leaked through. On July 10 he became the proud papa of an eight-and-a-quarter-pound boy, Thomas James. Mother, son, and papa are all doing well, thank you.

Near the end of August your Secretary was pleased to receive a phone call from Doug Esperson, X, and to have lunch with him. He is working with a consulting engineering firm in New York which seems to handle everything except chemical engineering, but he's enjoying his work a lot. Doug told me that Harry Hollander, V, is now in his father's fur dyeing business in Newark. The establishment, by the way, is reputed to be the largest in the world.

We saw Ira Lohman, VI, and Jim Gilliss, XIII, a few times last summer. Ira is in Washington with the Navy Department, while Jim is with the Federal Shipbuilding Company in Kearney, N.J. Jim says the only rest he's had since he went with the yard was during the recent strike. Guess the Navy's got him going again now.

Last spring we ran into Elmar Piel, V, in Swarthmore, Pa. He had gone there from Wilmington for supper. He said he was enjoying his work very much in the city of the Du Ponts. Last spring was the last time we saw Jay AuWerter in New York. At the time he was in the big city for one of his brief periods between trips around the East to various aircraft factories in connection with his work with *Aviation*, the McGraw-Hill publication. News now comes that Jay is in the Army and is stationed at Wright Field. We hope that he and his bride like army life.

As you may know, your former notes-gatherer and present Class Agent, Lloyd Bergeson, XIII, is now in Philadelphia at the Cramp Shipbuilding Company. We had dinner with him one Sunday last spring and would like to have seen more of him, but he seemed to be working (or something) every time we called, and then we were moved back to New York. Bergy has done a splendid job of squeezing shekels from us, in spite of his very busy days, classmates, and we all owe him a round of applause.

Not long ago we ran across another Technology man who has moved to New Brunswick from the Goodyear Tire and Rubber Company in Akron. He reported that Bob Treat, X, is doing very well in Akron with their Pliofilm division. You can send your complaints on your new shower curtain to Bob. (Although we're sure you won't have any if it came from Bob's department.)

Frank Gardner, VIII, finished his doctor's work in metallurgy this summer and has started to work in the laboratory of the American Brake Shoe and Foundry Company in Mahwah, N.J. We wish him all sorts of luck in his new job.

Say, '38 men, how about some news this year? Won't you just jot on a post card a short account of your activities and send it to either of your Secretaries? The rest of the gang would like to hear about every one of you. — DALE F. MORGAN, *General Secretary*, 142 Woodland Avenue, New Rochelle, N.Y. RICHARD MUTHER, *Assistant Secretary*, Room 1-180, M.I.T., Cambridge, Mass.

1939

After the long summer pause, we again take pen in hand to report on the doings, activities, and, most of all, the romances of the Class: Art Cook's engagement to June Heatlie of Norwood, Mass., was announced; Charlie Wetterer has become engaged to Mary Grace Sherman of Melrose, Mass.; likewise, Jim Ferry is about to tread the path with Natalie Macdonald of Northbrook, Ill. Burns Magruder, now a lieutenant on active duty at Aberdeen, has become engaged over the summer to Beatrice Lowell of Boston and Barnstable. Finally, Jim Bruce and Mary Welles of Geneseo, N.Y., are also planning it.

Several of the engagements mentioned may have become marriages by this time, since they date back to early summer. Here are a few notices on marriages which have taken place since our last issue: Bob Saunders was married to Ellen Sibyl Orr of Savannah, Ga., on September 24; Alex Thackara and Cynthia Thorndike of Millis, Mass., took the same step back last May; and Bill Babcock married Jane Sweet in Ridgewood, N.J. Another wedding which we may have skipped earlier in the year was that of Paul Sokoloff to Helen Syman last spring. During June the tradition was well maintained with the following weddings: Bob Withington to Betsy Merrow from Hyde Park; Dick Robbins to Rosemary Quick of Newtonville; Lysle Alderson to Jean Macdonald; and George Hulst to Lillian Kent of Upper Montclair, N.J. Later on in the summer Bill Pulver was married to Adrienne Thorn of Melrose, Mass.; and Clint Lawry embarked on the sea of matrimony with the former Faith Hopkins of Melrose on August 23. Clint, incidentally, is still with the General Electric Company in Schenectady.

(Note: Perhaps the wedding announcements appear to be rather brief, but there are several such and, with all due respect, they usually read somewhat as follows: "The bride wore a hoop skirt of white net over satin, and a fingertip veil. Her white bouquet had a white orchid as a centerpiece. All three attendants were gowned alike in light blue chiffon. Each wore a circlet of flowers in her hair and carried a bouquet, that of the maid-of-honor being purple and yellow, while those of the bridesmaids were pink." Very interestin', it's true, but somehow it doesn't seem too appropriate.)

Other weddings include that of Bob Fairbairn to Patricia Pope of Wellesley Hills; of Hans Schaefer to the former Louise Baldwin of Wollaston, Mass.; and of Wilbur Gray to Gertrude Patterson of Somerville, Mass. ("X wore beige with a corsage of pink roses and white sweet peas" — if you see what's meant. Guess that should be enough in the descriptive accompaniment line for some time to come.)

From Freddie Cooke (F.A.F.C.) we hear: ". . . I am no longer in Pittsburgh but now find myself on active duty as an ensign in the Civil Engineer Corps Reserve, United States Navy. I am at present attached to the public works office at the Washington Navy Yard. It would be futile for me to try to give you an accurate description of our work; suffice it to say that the Civil Engineer Corps supervises the construction, maintenance, and repair of most of the shore facilities of the Navy. In these times, that includes a multitude of jobs from Greenland to Manila.

"The last I heard of Bob Touzalin, he was leaving the Steel Corporation for greener fields. He was going to go with Arthur G. McKee and Company, I believe, and try his hand at selling blast furnace equipment. . . ."

Hal Seykota, at Aberdeen Proving Ground, Md., came through with a letter to ye Class Agent some time ago: "It was nice of you to cushion the blow of a touch with the news about the boys. Hope you'll make an institution of it. I mean about the news.

"I suppose you are interested in some news about people and people, so I'll try to pass on a bit. Hall, Woolford, and AuWerter '38 have broken up their Bronxville apartment. Leigh and Durb have decided that their futures lie with the Air Corps, so they volunteered and, after a nine months' training course, expect to be commissioned. Bus Emerson is taking the flying cadet course with them at Chanute Field, Rantoul, Ill.

"Bob Schmucker is with the Crucible Steel Company of America in Harrison, N.J. I had dinner with old Sadie last summer but didn't have much time to shoot the breeze. Dick Kaulback is in Syracuse with the Halcomb Steel Company. Big Bob Church is at some shipyard south of Boston. I saw him last fall, and he told me then that he had just completed a successful campaign and that he was engaged.

"Guess that takes care of the Phi Kaps, with the exception of myself [Hal]. I traveled around the country last year for the International Filter Company of Chicago as service engineer, installing and adjusting water and sewage-treatment plants. I changed jobs in September, 1940, when I went with the National Fireworks Company at West Hanover, Mass., and was with them in a production capacity until I was called to active duty on January 1.

"Just before I came here I went to my first wedding and gave the bride away. She was my sister, Doris, and she married A. J. Birchall, Jr., a Rhode Island

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State chemical engineer. — Among the notables present here at Aberdeen are Bollerman '40, Brewster, Castleman, Constance, Fife, Graffeo, Magruder, and Reed."

Gene Thatcher writes a very interesting letter: "I just received the last issue of The Review and, feeling not a little ashamed at getting so much pleasure from the class notes and yet not contributing any news, I thought I'd break down and let you know my whereabouts and doings. Of course I spent only a year with the Class, but nevertheless I get quite a kick out of reading about the gang.

"Prior to August, 1940, I spent my time at various work in the utility field, on construction, maintenance, personnel, and safety. In August, 1940, I started to work for the A. B. Chance Company in Centralia, Mo., as a field engineer. My job deals entirely with live-line work. We design and build tools to handle all the various problems that present themselves in live-line maintenance on all voltages from 2,300 volts to 220 kilovolts. My activities are confined to that little territory that lies between the Sault Ste. Marie, Mich., to San Diego, Calif., and New Orleans to Seattle. Oh yes, I'm married — but my wife travels with me. I'm much concerned with the fear that I'll get soft from being in the North in the summer and the South in the winter.

"Just before I left Indiana, Manning Morrill spent a night with me. He was en route to Whiting, Ind., where he is working for the Standard Oil Company of Indiana. We had an enjoyable evening talking and recalling the activities preceding Field Day back in '35. Bill Guy wrote to me a few times from Glendale, Calif., where he was employed by the Lockheed Aircraft Corporation. Bill was doing big stuff there, so I understand. The last time I heard from him he had just completed a scale design of an airplane part, and the drawing was one hundred feet long. [Bill is now at the Pendleton Air Base, Pendleton, Ore.]

"I meet quite a few M.I.T. men in my travels, at conventions, and so on, but I haven't met any '39 men yet. I'd be mighty glad to hear from any of the Course VI fellows, and in turn to look up any of them who happen to be located west of the Mississippi. When I get down to Rio Valley next winter I might go out and keep Beer company atop that tower. I believe I might help him out on that liquid situation, too."

Art Zeldin, who is at the Valley View Mine, Ivanpah, Calif., writes that he has been promoted to the job of assistant to the superintendent. The mine and mill have now reached the point where they are producing gold at a profit. Zeldin's duties remain about the same in that, because of the small size of the operation, he dabbles in all sorts of work and problems connected with the mine and the mill. One day each week he has to take over the job of running the mill. With all of the odds and ends, he has a wide variety of work and is kept fully occupied.

Bill VerPlanck gave up his mining job in Quebec at the end of last January and returned home to Salem to volunteer for a year in the Army, and at last accounts was with the ninth company of the second armored division, Replacement Center. He has probably been assigned to an engineers' regiment by this time.

Dick Steiner, now married, has been called to active duty on his commission as ensign in the Civil Engineer Corps of the United States Naval Reserve and is now serving as housing and real estate officer in the public works department at the United States Naval Aircraft Station in Jacksonville, Fla.

After studying a year under a fellowship grant, Zeke Losco was awarded his master of science degree in metallurgy at the commencement exercises of the Carnegie Institute of Technology last June 2.

One of our graduate members, F. Q. Gemmill, wrote a letter some time ago expressing regrets that he could not have known the Class better, but adding that the associations he did have were very pleasant. He is now working for the Sperry Gyroscope Company, Inc., in Brooklyn, and is kept more than busy, as might be expected, following up a two-year project. It looks as if an impending wedding is on the horizon.

Morrie Nicholson officiated a short time ago at a Randolph Club party in Springfield, Mass., where several Institute men were in evidence, including Bill Pulver, Art Gould '38, Jim Thornton '41, and yrs. t. Needless to say, the punch compared most favorably with the Kappa Sig's annual affair.

And there's one slight quotation from Burns Magruder which absolutely can't be overlooked. He speaks of our colyum, "which contains a surprising amount of interesting stuff," — for which many thanx.

A very informative letter, written on April 9, from Mike Herasimchuk contains the following, which is perhaps a little outadate but still pertinent: "One chap in our Class has covered plenty of territory since he finished the best Course in the Institute (no need to mention Course XIX). Harold Muckley, who was better known in the Dorms as Four-Seconds-Eight-Ounces after he showed the bottom of his glass to Bill Brewster at the Del after a final in May, 1939, has been employed by the following steel plants since graduation: Youngstown Sheet and Tube, Acme Steel, Inland Steel (where he saw Stew Arnold who was just finishing his training course), and finally by the best of the lot, Bethlehem Steel Company. Muck worked the open hearths at the various plants, and when he started with Bethlehem he had enough experience to be assigned first helper or the man who actually makes a heat of steel. Muck is slated for big things, inasmuch as he has set himself a definite goal in the open hearths.

"Joe Jefferds '40 was a looper until the Army Ordnance insisted that he come to Aberdeen to play in the war games. Bob Church, also a '40 looper, was assigned to the Fore River Yard in Quincy, Mass. — Henry Guerke '37, formerly a champion Technology miler, is in complete charge of a metallurgical laboratory situated in the heart of the Bethlehem Steel Company. He is the father of a baby girl.

"I ran into Irwin Weiss, II, and learned that he's working for the Mack Manufacturing Corporation out of Allentown, Pa. He was doing road tests on the new Pennsylvania superhighway. He reported that Walter May, II, and Tony Arias, II, were working for Mack truck.

"On a trip to Texas, I managed to find President Bartlett in Tulsa, Okla., where Dave not only operates the Keener Oil and Gas Company but also continues to serve only the best. Pudgy really throws a salty party. On the same trip I caught up with Bill Wingard and his wife in Effingham, Ill., where Bill was roughnecking in the oil patches before he returned to West Newton, Mass., as you reported. [He is now in East Orange, N.J.] While in Texas I tried to find Joe Weeks, X, in Port Arthur where he was working for the Texaco Company. I didn't see Joe because the address which he gave the Alumni Office was that of the biggest vacant mansion in Port Arthur.

"Did you know that Ben DeSimone left the International Nickel Company to take a position with the Curtiss-Wright Corporation, propeller division, as a metallurgical engineer? . . . Since my last report I've been placed in charge of elevated temperature testing for the Bethelehem Steel Company."

Leigh Hall wrote, among other things: "Did you know that George Cremer was married to Billie Tyson on June 21? I understand that Sid Gesmer (still a civilian) is teaching somewhere in Rantoul, but I haven't seen him yet." — STUART PAIGE, *General Secretary*, Box 207, Greenwich, Conn. ROBERT C. CASSELMAN, *Assistant Secretary*, 271 Cypress Street, Newton Centre, Mass.

1940

The amount of news for this issue seems very gratifying, but I may be blinded by the length of time in which it has accumulated. Anyway, keep up the good informative work. Let's have an increase in newsy letters, and I'll try to reproduce as many of them as possible in The Review.

Our Course I Secretary writes me that Andy Carr arrived at the Curtiss-Wright Corporation in Buffalo some time ago. Also, Wink Read is still working for the Panama Railroad Company and likes it in spite of the fact that his "only white man's meal is received on the Grace liners." Wink says, however, that the Army has its eye on him, and the call may come at any time.

From Don Cole I heard a bit of news about the Course XVI boys. Don wrote that when he first arrived in the Hollywood area he was one of seven '40 fellows who formed their private Technology club. Besides Don, there were Paul Alberti, Harvey Brown, Bill Green, Charley Lindblom, Sandy Livingston, and Bob Pickett. At that time Bill Green and Don were working for the Vega Airplane Company, a Lockheed Aircraft

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Corporation subsidiary, and the others were all working for Lockheed itself. Bill Merrill and Robert Prince are also in that vicinity, working for Lockheed; and Harry Martin is with Douglas Aircraft Company, Inc., in Santa Monica, Calif.

Don continues: "Now our little club has broken up. Sandy left a few weeks ago to take the Navy's training course at Pensacola; Bob Pickett and Paul Alberti departed to go back to work for United Aircraft Corporation in Bridgeport, Conn.; Bill Green has taken up bachelor quarters on one of the near-by mountains; and Charlie Lindblom got married.

"We lead a pretty busy life here, as I guess everyone else does who is working on government contracts. Most of the work Lockheed and Vega are doing is on the *Hudson* and *Ventura* bombers for the British, except for the much publicized *P-38* for the Air Corps, which we all think is still the fastest plane in the air.

"Most of the fellows are working in the shop contact group, which serves as a liaison group between the engineering department and the factory. Charley, Bill Merrill, Bill Green, and Robert Prince are all doing this. Harvey Brown is drafting, and Harry Martin is in the flight research department. I'm assigned to the job of trying to reduce weight on the Vega ships, which is a real job. I hope this information will inspire a little from the other XVI boys, as we'd like to hear how and what they're doing."

From Hurley Bloom came the following bit of news concerning Course IX members: "I'm still here at Harvard Law School, along with Sam Omansky, V. The Army, however, seems to prefer that we don't return next year, so both of us have applications in for the Naval Reserve — Sam for a technical specialist rating, and I for the supply corps. Both groups have courses at Georgetown University. We are not giving up our hopes of eventually practicing patent and engineering law, however, so Sam and I hereby serve notice on the classmates that if they ever need a good lawyer they can come and see one of us.

"Back in February, Martin Antman wrote that he worked at Wright Field as an inspector of signal corps material for a while. He saw Norman Laschever occasionally. Martin then transferred to Ballantine Laboratories, Inc., in Boonton, N.J. (This isn't a brewery, but a radio firm, in case you suspected otherwise.)

"As far as I know, Ted Talbot is still with the Beetleware division of the American Cyanamid and Chemical Corporation in Bound Brook, N.J. John Tyler and his wife, Frances Blackwood Tyler '37, V, are both working in the vicinity of our alma mater. John is doing crystal-pattern work with Martin J. Buerger '24, Associate Professor of Mineralogy and Crystallography. Mrs. Tyler is doing psychopathic research at the Boston Psychopathic Hospital.

"Joe Kripke is another would-be patent lawyer who is tied up with the government for the present as an air corps material man. Hutzler was still in Philadelphia at the end of March, so check Lish as a good Federal Bureau of Investigation man on '40 locations. Norm Klivans, X, is getting his master's degree and is holding off his active duty until he does. By the grace of something or other Bob Davis hasn't been called away from the Shell training course. Ed Wallace received his master's degree in metallurgy, and is now working for the Ulster Knife Company, Inc."

News of some of the Course VI boys came to me in an interesting letter sent by Dick Lawrance. Dick writes: "Hazel Taylor of Worcester and Johnny Martin were married last February. This is the only marriage I've heard about directly, but I suspect that there have been others. Johnny is now in the signal corps and is at present at the Institute taking a special Army course. Dick Herr and Charlie Markham also took an Army course — this one in meteorology. Other electrical engineers at Technology include Herb Weiss and Dick Lawrance, working in the research laboratories; Bill Toulis, on leave from the Submarine Signal Company; Dick Talpey from Stromberg Carlson Telephone Manufacturing Company; and Jack Speller '41 from the General Electric Company. Bernie Greenberg, VI-B, appears to have gained the distinction of publishing the first paper from '40's Course VI — on a method of calculating illumination. I hear that Stew Miller is now with Bell Telephone Laboratories, Inc., and that they have applied for a patent on his thesis subject, a direct current amplifier. Bob Hull and his wife are in New York, both working at Columbia University. Paul Lamson is in the Army; George Mounce is back in Canada working in Ottawa for the National Research Council of Canada. When Otto Arnold was last seen many months ago, he had just finished some work on a new transmitter for station WNBH in New Bedford. (It still seems to be on the air!) After working for a while with a New Jersey power company, Fred Lange was captured by the Army and is now at Fort Monmouth, where there are several other Technology men. Other concentrations of E. E. graduates from our Class seem to be at the Naval Research Laboratory and in the field as inspectors for the Army."

Dick Wilson wrote to say that he had played some basketball last winter and had even made a playing trip into New England, thereby getting a chance to catch a glimpse of the Institute. Lou Michelson and Dick are still stanch Course VIII men, and are approaching the end of their first year's service with Corning Glass Works. According to Dick, Ed Hellier and Nancy Weeks were married in Bloomfield Hills, Mich., and Carl Chamberlain is now flying for Uncle Sam in the Air Corps.

Ed Bernard has been covering the United States, and we mean that literally, too. He left Richmond, Va., and the Reynolds Metals Company, Inc., for Fort Monroe, Va. Since then he has been to Fort Knox, Ky., Pine Camp, N.Y., back to Fort Knox, and then to Camp Polk, La. Ed saw Bernie Feldman and Jerry McCaul for a few minutes in between his moves.

Bill Kather wrote from Edgewood Arsenal, Md., that Marsh Bearce was called as a second lieutenant and is in Springfield, Mass. Bill was caught in the draft, but since then has been able to get away to act as an usher at Phelps Walker's wedding to Maxine Cummings. He writes that he has had short visits with George Lorant; Andy Kopischiansky, who is with the Bendix Aviation Corporation, Doc Wingard '39; Paul Bollerman; and Larry Teich. If plans were not changed, Bill was married sometime in October to Peggy Garrabrant.

Al Wu finally wrote me to tell of his location and present work. He is now settled on Staten Island where he is running a control laboratory for an ore-dressing plant by the name of National Reconditioning Company, Inc. This plant concentrates mainly on tungsten ores imported from China. Just before Easter, Al was married to Marjorie Li at the Chinese embassy in Washington.

According to information supplied by the Naval Aviation Cadet Selection Board of the First Naval District, Bill White has qualified for an appointment as an aviation cadet. Bill completed a one-month preliminary flight training course at Squantum, Mass., and now will take his advanced training in Florida or Texas. Cadet White resigned a commission as a second lieutenant in the regular Army Reserve in order to qualify for Navy flight training and to become a Navy flying officer.

Dave Heskett has been caught in the draft and is working with the engineers. He is attached to the map section of headquarters. They have equipment to survey, and draft and print maps. Dave was looking forward to a month's maneuvers in California at the time he wrote his letter. He says the maneuvers are to be carried on near the former ranch of William Randolph Hearst, whose main ranch house is to be used as general headquarters.

Bob Hess is aboard the U.S.S. *Belknap* and is now in and out of the Hampton Roads area as often as deOlloqui. Bob hasn't yet acquired his sea legs, we are given to understand.

Joseph K. Knight wrote me an interesting letter from a station hospital in Fort Knox, Ky. His letter read in part as follows: "Last fall I went to work for E. I. du Pont de Nemours and Company in their industrial engineering division. I was stationed at the Edge Moor, Del., plant of the Krebs Pigments and Color Corporation, a Du Pont subsidiary. The work was decidedly varied and darned interesting, with everything from economics and mechanical engineering to personnel problems and chemical research.

"Then on February 10 came the big upset to my none-too-carefully laid plans for an industrial future — I was drafted! I was sent to Fort Devens, Mass., for a week; then four hundred of us were sent down here to Fort Knox by special train

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to undergo our six weeks of recruit training. After that was over, we were all to be assigned to regular companies in accordance with our individual abilities and training. Unfortunately, the neat little plan struck a snag in my particular case; I contracted pneumonia after the first two weeks and have been in the hospital ever since. I have hopes of being released within a short time, however, and then will finish my recruit training. After that I hope to be able to get into the chemical warfare division, since chemistry is one thing I'm supposed to know a little something about. But that remains to be seen."

Bernie Carver, when last heard from, was at Jefferson Proving Ground in Madison, Ind. [His present address is Room 648, 600 Washington Street, Boston, Mass.]

Early last June, I had a very pleasant visit with John Titherington, who was then located at Langley Field here in Virginia. John was expecting to be moved to Bangor, Maine, but I have not as yet heard whether he really was. J. B. spoke of having seen Zeamer several times while at Langley.

Herb Hollomon was appointed an instructor in metallurgy at Harvard University, the appointment to become effective September 1. Margaret Knox Wheeler became his bride on August 12 at a ceremony held in Christ Church in Cambridge.

Other marriages that have come to my attention are those of: Priscilla Andrews to W. G. Osmun on April 15 at Valley Forge, Pa.; Anne Hilbrunner to Benjamin Griffith, Jr., in Tulsa, Okla., on April 14; and Lucille Winlock to Julius Harry Orpen in Stockton, Calif., on March 31.

Dorothy Leu was married to F. K. Loomis in White Plains, N.Y.; Priscilla Schirmer to R. T. Church in Concord, Mass., last July; Rose Mary Hill to A. J. Wadman on May 4 in Philadelphia. Suzanne Wolbach became the bride of A. E. Frankel on June 15 in Chicago; Anne Carr Watson was married to W. T. Green in Los Angeles, Calif., on July 19; Frances Smith to George Burt Bradshaw, Jr., on June 17 in Roselle, N.J. Mary E. Beers and Frederic W. Watriss were married in September.

Marion Lincoln's engagement to Robert V. Gould was announced last June, and Rosamund Scott's engagement to Paul Alberti was announced in May. Some more recent engagements are those of Marjorie Park to Barrett L. Taft; Juliette Marian Barradale to Byron W. Wheeler, Jr.; Julia Olga Schmidt to Robert G. Hall; and Jane Wilkinson to Reeve C. Morehouse.

In spite of the fact that as Class Secretary I am supposed to write of my fellow classmates, I want to announce my marriage in historic Williamsburg, Va., on June 21 to Marion Marcus of San Francisco. Perhaps that may have something to do with the fact that I failed all of you fellows in the June and July issues. Shipways and dry docks are still being built, and I'm one of the many working toward the completion of that part of our defense program. Don't forget that this column is your column and it takes news to fill it out successfully. — H. GARRETT WRIGHT, *General Secretary*, 44 Main Street, Hilton Village, Va. DAVID T. MORGENTHALER, *Assistant Secretary*, Dravo Corporation, 300 Pennsylvania Avenue, Pittsburgh, Pa.

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Before we open the gates and let the words pour out, let it be known that this column does not maintain that we have the most up-to-date, accurate information in regard to the whereabouts and activities of the members of the Class. For more detailed information we refer you to the file of War Department special orders, the bureau of navigation orders, and the marriage intention listings in your daily newspaper. Seriously, the main occupations of the members of '41 seem at this time to fall in one of the three categories mentioned above. No doubt each man believes that his new step is most important and should hardly be classified as a mass movement. In particular we refer to engagements and marriages. It is the wish of this Secretary to devote a paragraph to any '41 man who has taken that important step, but such procedure at this time would be impossible, for our list is a long one. Bear with us then, and remember that between the lines go our best wishes.

In the July issue the names of the Course Secretaries were withheld for lack of permanent addresses. It has been difficult to get men to stay put long enough to receive a regular flow of class information. The result has been that this Secretary got in touch with a number of key men throughout the Class asking them to initiate a set of chain letters. This system does not refer to the money-making scheme of several years ago which has popped up again in the last few months. Such a chain letter as advocated merely represents an informal round-robin note. One man contacts ten to fifteen other men and asks them if they would care to participate. Upon receipt of a number of affirmative answers, the key man simply lists the participants and their addresses (usually men possessing some common interest) on the top of a page, adds a paragraph about his own activities, and ships the letter to the first man on the list. The first man reads the paragraph, adds one of his own, and ships the letter on to the second man — and so on. Whenever the letter hits the key man, the latter pulls out any information which may prove interesting to the Class and ships it to this Secretary. We believe that the '41 men will be bound more closely in this informal manner than through a formal correspondence club.

All this may seem very elementary to you, or if you have received some information prior to this issue via the mail, it may seem like old news. The work involved in sending out such information individually, however, warrants the risk of slight boredom on your part. So you who have started such a chain, good work! You who have not, and feel that your group is not sufficiently represented in this column, why not get one of these letters going among yourselves? The Register of Former Students keeps pretty close tabs on address changes; we find that the "Technique" addresses supplemented by a "please forward" prove very satisfactory.

Over and above the chain letters stand the Course Secretaries, with whom we urge you to keep in touch. These Course Secretaries are for the most part men chosen by the Class to represent the various Courses at the class day exercises (you remember, way back in June). In some cases the men are so situated that a writing address cannot be permanently established. We have been fortunate to receive the kind offers of various members of '41 to act as Course Secretaries. Some large Courses, therefore, may have more than one Secretary, while other Courses may have none.

We offer for your approval: Course I: Lt. Bill Butt, Matériel Division, Wright Field, Dayton, Ohio. Course II: Frank Langhammer, 206 West 21st Street, New York, N.Y. Course III: Will Mott, 1415 Otto Boulevard, Chicago Heights, Ill. Course IV: We've lost contact with Gene Crawford, Ensign, United States Naval Reserve; let's hear from somebody. Course VI: We haven't heard from Don Scarff out in Chicago; Bob Mayer back at Technology for a fifth year will be a good man to contact. Course VII: Daniel Lenane, 311 East 31st Street, Baltimore, Md. Course IX: Paul Erlandson, 119 East Summerfield Avenue, Collingswood, N.J. Course X: Bill Cadogan's home address at 38 Ronald Road, Arlington, Mass., is yet good, even though Bill is doing practice school work elsewhere; Les Corsa's address at 21 Lincoln Terrace, Hillsdale, N.J., is also still good. Course XV: Johan Andersen is all set with headquarters at Hopkinton, Mass. (If you know Hopkinton, you'll realize that the address given is sufficient.) Irv Koss was to handle the Course with John, but we've given up hope, for Koss and Joe Myers are traveling around the country for Carnegie-Illinois Steel Corporation, thus making correspondence a bit difficult. Course XVI: We are more or less out of touch with this Course; Bob Blake, 7603 Ditmars Boulevard, New York City, and Quentin Wald, 1625 Main Street, Glastonbury Conn., are good men to contact. Course XVII: Ed Marden, 246 River Road, Winthrop, Mass., is our best source of information. Course VIII: we haven't Don Cameron's address as yet; Lieutenant John Murdock, Aircraft Warning Department, Fort Monmouth, Red Bank, N.J., is the man to write to. Most of these men have agreed to act officially; to a few, the course secretaryship is a surprise. We hope to hear from all concerned.

Things have happened in *Blitzkrieg* fashion since the last issue of The Review. This Secretary was back at school attempting to pass a few required courses when the Army called him. He is now a second lieutenant in the Quartermaster Corps. Mert Richardson, Boris Miller,

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and Ed Marden were the other '41 men called down to a three months' course at the quartermaster school in Philadelphia. Orders have just come through sending Mert and Boris to the Chicago quartermaster depot. Ed Marden is to be an assistant zone-constructing quartermaster at Boston (lucky boy), while your Secretary is sent across Philadelphia to the quartermaster depot for further instruction. Some men have been writing to us directly in Philadelphia. Because of the loss of roommates, that address is no longer valid; the Dorchester address listed below will reach me at all times. So much for our end of the news.

Bill Welch, who works for the Cramp Shipbuilding Company, is rooming in Philadelphia with Herb Moody of chemical engineering fame and now at Rohm and Haas Company. Across the river in Camden, N.J., Paul Erlandson and Dave Shapiro are working for the Radio Corporation of America Manufacturing Company, Inc. Reid Weedon telegraphed me that he is to be stationed at the Philadelphia Navy Yard. Counting the army men listed above, it was no wonder that the '41 men in Philadelphia decided to have a Technology night. The party turned out to be a stag in honor of the engagements of: Lyle Merton Richardson, Jr., to Nancy Linda Boyle of Reading, Mass.; and Paul M. Erlandson to Elizabeth Bradford Hague of Fitchburg, Mass. Picked out of a Philadelphia newspaper was the announcement of the engagement of Marie Louise Stafford of Mount Airy, Pa., to Donald Douglas Scarff, who is now at the General Electric Company in Chicago.

The second Reserve Officers' Training Corps class of the quartermaster school is to be held at Camp Lee, Va., and has drawn Howard Samuels, Charles Whitney, William McKenney, and Rogers Burton Finch, all lieutenants. — Bill McKenney has married Constance Ridgeway of Newton; Rog Finch will walk the aisle with Barbara Hines of Broadalbin, N.Y., next Christmas. Good luck, boys.

P. M. Erlandson tells us that your Assistant Secretary, Bill Ahrendt, has been doing industrial control production work at the General Electric Company in Scotia, N.Y. Bill is back at the Institute for the fall term. Tom Campbell, now a lieutenant in the engineer corps, is at the Air Corps advanced single engine flying school in Selma, Ala. Bob Mayer is doing radio research work at the General Electric Company in Scotia, N.Y., as are George White and Roger Robertson.

So and so is doing secret defense research at Umpty ump in the state of Blah — have to be careful these days. For sake of simplicity let us say that Joe Unger, Bob Alfred, George Hite, Earl Krohn, and Nat Rochester come under the category of "so and so."

The press announced the marriage of Mary V. Hoyt of Laconia to Fred T. Coder, an electrical engineer at Kearny, N.J. Leon LaBombard left Bristol, Conn., long enough to act as best man. Leon also finds time, writes Frank Langhammer, to visit Pratt and Whitney Aircraft's Frank Walker and Walker's recent bride in Hartford. Langhammer and Joe Bowman are rooming together in New York and just barely staying out of the draft. "You can pass the word along to the boys that the town here is all it's cracked up to be. I have met Matt Mank '43, now with the Royal Air Force in Canada, and Tex Noyes '42."

John Murdock wrote from Fort Monmouth: "Technology Alumni of all classes got together here the other night for a dinner, some stories by Lieutenant Colonel Pigg (formerly Associate Professor of Military Science at the Institute), and some army motion pictures." — John Potter, George W. Clark, and John J. Renner are at the Signal Corps school at Fort Monmouth, N.J., while J. B., Kirke Marsh, Dick Langworthy, and Art Gingrande are in aircraft warning. Boston papers tell of Kirke's engagement to Priscilla Berry of Needham, Mass. John enclosed the news that Cap Adelson and Rudy Hensel are with the Air Corps at Wright Field. Fred Haddock is happily married and is with the naval research laboratories in Washington. J. B. vouches for the cooking.

Fred Kunreuther is in Houston with his bride. Working at the same Shell Petroleum Corporation are Ed Gelus '35 and Ivan Cliff '33.

Quentin Wald wrote from Hartford, Conn., that he and Bob Williams are in the research division of United Aircraft Corporation. Charlie Butt is at the Glenn L. Martin Company with Ray Krieger. Art Lowell is at Wright Field in Dayton with William Lamar, Malcolm Abzug, and Basil Staros, while Alex Poskus and Ben Scott are working for the Curtiss-Wright Corporation in Buffalo. Bob Blake wrote us a card from Jackson Heights, N.Y.: "Saw a bunch of '40 men in Washington on Labor Day — Godfrey, Penn, Morgenthaler, Farrell, and McGuigan. We had beer at the Army-Navy Country Club."

We told about Les Gott's job in Niagara in the last issue, but it seems Les was called to the Aberdeen Proving Ground, Md., for a while. He and Dave McNally are in the ordnance school for the time being, prior to a permanent assignment. Hank Avery and Ray Harper are editing the ordnance training manuals at Aberdeen. It is rumored that Harper is commuting from New York. Diving champ Dave Howard has been stationed at Fort Bragg, N.C. Don Howard, meanwhile, has been in the aircraft ordnance division, prior to a foreign assignment. Ed Beaupré, recently married, was sent from Aberdeen to the Boston ordnance office. Zack Abuza, who received a swell raise in pay just before being called to active duty, is stationed at the Boston ordnance office, along with Walt Kryeski. Johnny Sexton was last seen at Aberdeen. Ray Foster is now at the New York ordnance procurement office. It must be good to live at home while in the Army.

It seems as if those grand marches meant something after all, for we can now announce the engagement of Charlotte Douglass to Will Mott. Will is in Chicago working for the American Manganese Steel division of American Brake Shoe and Foundry Company with Jim Fifield '40, Harry Platt, and Dick Pope, '40. This Secretary, while visiting Chicago over Labor Day, just missed Will but did get to see Warren Meyers, who is at the Elgin National Watch Company, a short distance from Chicago. That speedboat ride is unforgettable.

A note from John Macleod, forwarded through Bill Folberth, tells of work down at the Panama Canal. Bill Sheard and Bob Taylor are there, too, helping to build that which we thought was finished years ago. Speaking of Folberth — have you sent in your contribution to the Alumni Fund? If you paid for this magazine, you must have. If not, why not get behind Bill in his good work and help '41 hit its goal. Our experience as underclassmen has shown us what the financial support of the Alumni means. As far as job placement and wage scales go, we should certainly be the Class to hit far above the estimate set for our share of the Fund. A lot of men have held off until they could get on their feet and pay off debts left over from school. It seems that just about this time we should be getting our second wind. Enough said.

It is unavoidable that we omit the information sent in by many men; to them we apologize. We are keeping it as a reserve in case the mails break down. In all sincerity, "keep them flying." — STANLEY BACKER, *General Secretary*, 46 Bicknell Street, Dorchester, Mass. WILLIAM R. AHRENDT, *Assistant Secretary*, The Graduate House, M.I.T., Cambridge, Mass.

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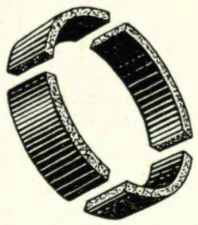

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We do propose, however, in future advertisements in this magazine to do a thing we have been wanting to do for a long time . . . we want to take you into General Radio's plant as far as Government regulations will allow . . . to describe a number of unique methods of design, manufacture and calibration which, we believe, contribute in no small measure to our long-standing position in the instrumentation field.

We shall try to make these advertisements of sufficient value to hold your interest. We will welcome your comments.

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